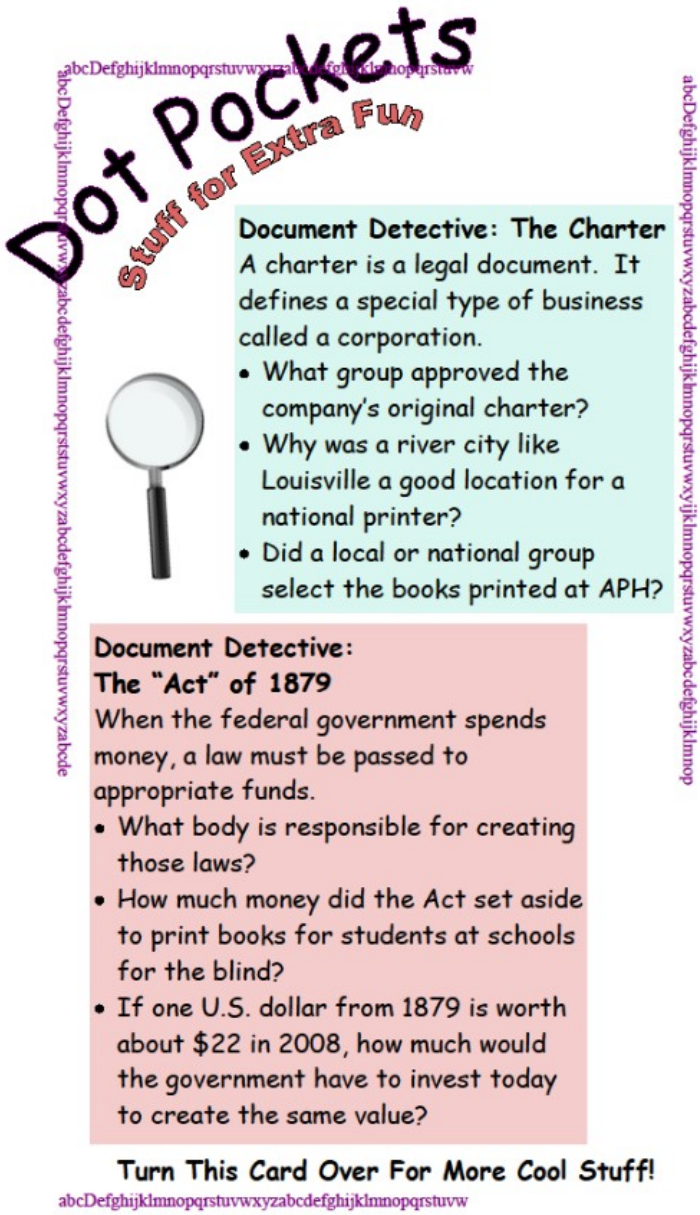
Interpretive Inventory of 1883 Gallery and Callahan Gallery

Compiled by Marissa Slaughter
June 2011

1883 Gallery: History in the Making

Interactive: Dot Pocket Exercises:



I.1 Exhibit Title

History in the Making: APH Past to Present

I.2 Main Label

Literacy is the key to centuries of recorded knowledge. It is central to our success at home, at work, and at play. In 1858, the American Printing House for the Blind was founded to help supply that key to people with visual impairments.

I.3 Accessibility label

Accessibility
APH is committed to accessibility. Our galleries present information in a number of ways. Labels are printed in large type in readable styles. Sound wands with recorded information can be found on the reading rails. Braille labels can be found in notebooks mounted below the reading rails, or on plaques mounted near the displays they describe. Many artifacts can be touched directly. Please be gentle as you enjoy these special exhibits.

I.4 Section Label

Much of our earliest writing was tactile. Scribes in the ancient world scratched records into clay tablets and carved the victories of their nations on stone. It would be thousands of years, however, before anyone thought to use such methods to teach people with vision loss.

398 C.E. Didymus, a blind religious scholar in Alexandria, Egypt, teaches himself to read with hand-carved letters. For almost 1400 years, he is a rare example of the possibilities for educating people with visual impairments.

Credits, Major Donors to the Museum

Major Donors to the Museum of the American Printing House for the Blind

Marie and Eugene Callahan

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II.1 Section Title

Out of Darkness

II.2 Section Label

Prior to the late Eighteenth Century, if you were born with or acquired a serious visual impairment, your prospects for independence were grim. Many groups of people were considered unteachable because of their race, their economic status, or due to a disability. But that was about to change.

II.3

Image: "Boy Leading Blind Man," undated stereograph card. In the ancient world, vision loss was seen as a curse or even heavenly disfavor.
Museum Purchase, 2003.192

II.4

Image: Staff and students, Kentucky Institution for the Education of the Blind, ca. 1850. The man on the left is probably school founder Bryce Patten. His brother Otis, who taught from 1842-1853, stands in the middle. Music teacher Joseph Smith, the first person with severe vision loss to graduate from an American university, stands to the right.
Museum Purchase, 2001.152

II.5

Bust: Anson Penniman lost his sight at age eighteen. One of Samuel G. Howe's first students at the Perkins School in Boston, he graduated in 1835. Two years later, Penniman became the first teacher hired at the Ohio State School for the Blind.
Loaned by the Ohio State School for the Blind

II.6

Object: Elements of Algebra by Nicholas Saunderson (1682-1739). The English mathematician and scientist lost his vision to smallpox as a boy. Saunderson was an outstanding example that children with visual impairments could learn, eventually teaching at the University of Cambridge.
Museum Purchase, 2003.86.1

II.7 Section II Timeline

1784 The first school for the blind is founded in France by Valentin Haüy. He begins with a single student, François Lesueur, and embosses the first book in raised letters.

1829 Louis Braille, a student at the French school, publishes *Method of Writing Words, Music, and Plain Song by Means of Dots, for Use by the Blind.* Although not immediately popular, its usefulness is clearly evident to users at the school.

1829 Bostonians found the first school for the blind in America. In 1831, the school hires Samuel Gridley Howe as its secretary. Howe develops a raised letter alphabet and creates a printing shop to publish the Bible and other works.

1833 Jacob Snider embosses the first American book for the blind, *The Gospel According to St. Mark,* in Philadelphia.

1842 The Kentucky Legislature charters the Kentucky Institution for the Education of the Blind in Louisville. Later called the Kentucky School for the Blind, it moves to Frankfort Avenue in 1855.

III.1 Section Title

Supply and Demand

III.2 Section Label

By the 1850s, the first graduates of American schools for the blind had grown up. There were few books for them to read. The library at the Kentucky school held less than fifty volumes. These graduates began pushing for a national publisher of tactile books.

III.3 Section Quote

“There is great mental activity among the educated blind, and their taste for reading and love of knowledge have created a pressing demand for an extensive library of embossed books.” APH Circular, 1860

III.4

Image: James Morrison Heady (1829-1915), was one of the first agents for the Printing House, traveling around central Kentucky with a model of an embossing press to raise funds. He was a writer, teacher, and prolific inventor, despite losing both his sight and hearing by age forty.
Photo courtesy Pat Heady

III.5

Image: The APH Cylinder Press from March 5, 1864 issue of *Scientific American*.
Museum Purchase, 2003.1

III.6

Interactive:
Placeholder: APH Charter Documents Flipbook & Interactive. Primary document study. The Mississippi Charter, 1857 and the Kentucky Charter, 1858

Object: William Fontaine Bullock (1807-1889) was a founding APH board member, and served as president from 1866 until his death. A prominent politician and judge, he received this gold-handled **presentation cane** in 1883 as a gift from the Louisville Bar Association. Bullock also wrote the first public school law in Kentucky

(1838) and helped found the Kentucky School for the Blind (1842). Museum Purchase, 2009.4

III.7

Object: Reproduction of ***Fables, by John Gay***, 1869, American Printing House for the Blind.
APH Collection, 1991.30

III.8

Image: "The Kentucky Delegation to the Funeral of Abraham Lincoln, Springfield, Illinois, May 5, 1865." Seen at No. 19 is Bryce Patten, the first superintendent of both the Kentucky Institution for the Education of the Blind and the American Printing House for the Blind.
Photo courtesy Filson Historical Society

III.9 Section III Timeline

1857 Mississippi charters a board to establish a publishing house for the blind. Dempsey Sherrod, a blind man, crosses the south raising political support for the project.

1858 Kentucky charters the American Printing House for the Blind. The board is chaired by former Secretary of the Treasury James Guthrie. Bryce Patten, head of the Kentucky School for the Blind, is the first superintendent.

Fun Fact The Missouri School for the Blind became the first American school to formally adopt the braille system in 1860.

1861 The outbreak of the American Civil War halts all work until the end of the fighting. The school property is temporarily converted into a military hospital.

1866 The first APH book, *Fables and Stories for Children*, is published in raised letters in a shop in the basement of the Kentucky School for the Blind. The company prints 400 copies over the next three years.

1868 William Bell Wait, head of the New York Institution for the Education of the Blind, introduces an adaptation of braille called New

York Point. The system is adopted by most schools in the U.S. during the 1870s.

IV.1 Section Title

A Permanent Subsidy

IV.2 Section label

The first tactile books were difficult to manufacture and expensive. Despite the social rewards, the small size of the market made it unprofitable for a commercial firm. Federal support would be essential.

IV.3 Section Quote

"That men of all parties laid aside for a time their political animosities to consider and supply with marked unanimity the educational needs of the blind, is a fact of no mean significance."
W.F. Bullock, 1879

IV.4

Image: Certificate, Vienna International Exhibition, awarded to the American Printing House for the Blind in 1873. APH received awards for its tactile books and maps at expositions in Philadelphia (1876), Paris (1878), Chicago (1893), and St. Louis (1904).
APH Collection, 1991.92

IV.5

***Object: MacBeth*, by William Shakespeare**, published in 1871. The first APH books were classic works and children's literature, produced in an early version of Boston Line Letter from hand-set type.
APH Collection, 1991.29

IV.6

Image: Congressman Albert Willis (1843-1897) was a Democrat from Shelbyville later appointed Ambassador to Hawaii.
Photo courtesy the Filson Historical Society

IV.9

Image: Benjamin B. Huntoon, third from left, and his brothers, ca. 1870. He served as APH superintendent from 1871-1919 and superintendent of the Kentucky School for the Blind from 1871-1912.
Photo courtesy Mrs. Von Schlegal

IV.10 Section IV Timeline

1871 Bryce Patten resigns and is succeeded by Harvard graduate Benjamin B. Huntoon.

1873 The Samuel Ruggles press is exhibited at the Louisville Industrial Exposition. The Printing House installs a steam engine to power the press, the first use of steam to print for the blind.

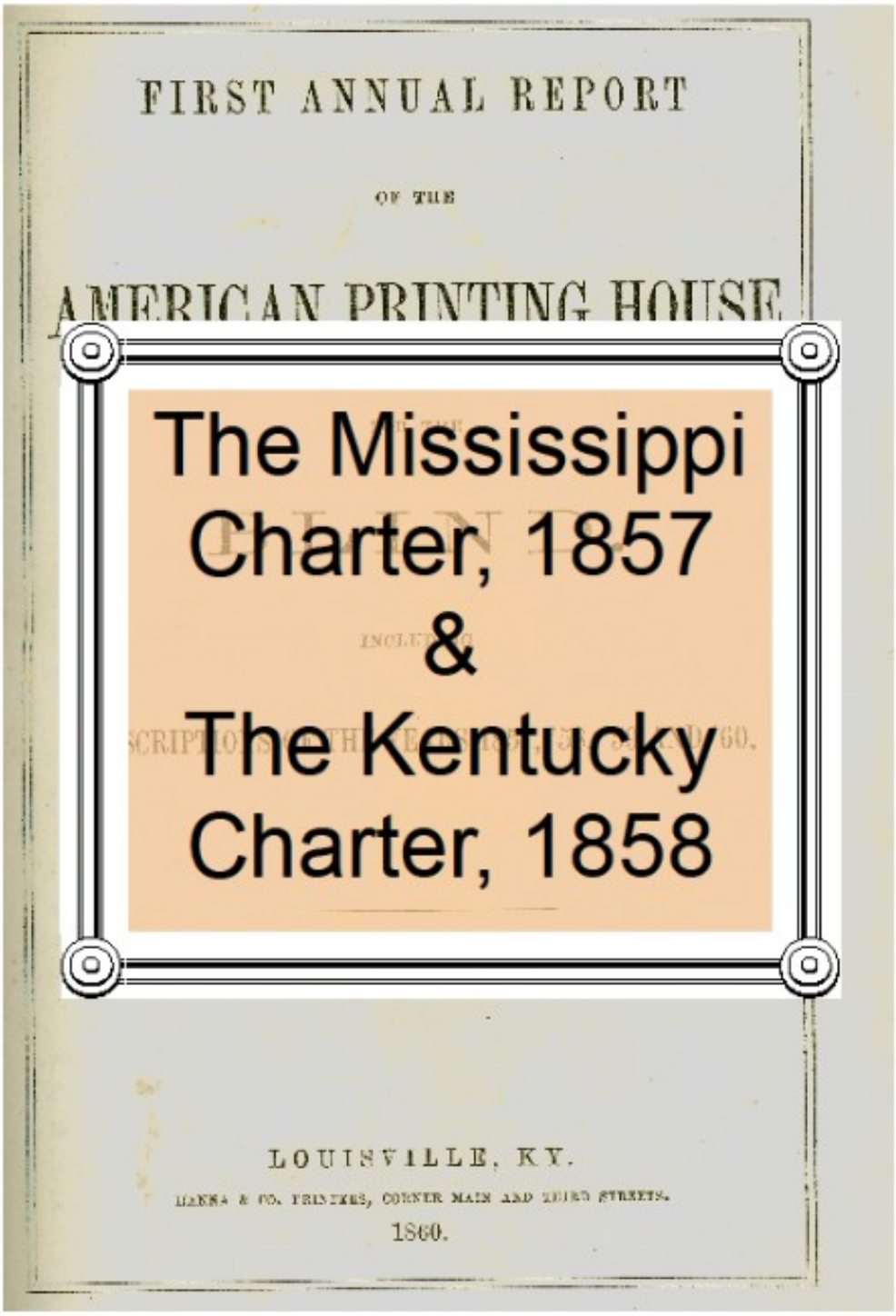
1875 The company produces its first book in the New York Point system and the first tactile book embossed using brass stereograph plates.

1876 The company introduces its first educational aids: handwriting guides, and models of dissected maps in partnership with John P. Morton & Company of Louisville.

Fun Fact: Thomas Edison invented the phonograph in 1877. He thought it might be useful to record books for people with vision loss.

1879 An Act to Promote the Education of the Blind establishes APH as the sole federally supported supplier of educational materials for people with vision loss in the U.S. Introduced in the House by Henry Watterson in 1877, the bill is pushed through by Albert S. Willis

Act to Promote the Education of the Blind, Kentucky and Mississippi Charters


FIRST ANNUAL REPORT

OF THE

AMERICAN PRINTING HOUSE

LOUISVILLE, KY.

1860.

The Mississippi Charter, 1857 & The Kentucky Charter, 1858

V.1 Section Title

Groundbreaking

V.2 Section Label

The federal subsidy meant that APH could pursue its dream of supplying materials to children in every state of the union. Realizing that dream would require expanded printing facilities, improved technology, and imagination.

V.3 Section Quote

"For the first time in the history of the world, an adequate supply of embossed books was assured the world."
APH Superintendent Benjamin B. Huntoon

V.4

Image: Woodcut, 1883 headquarters of the American Printing House for the Blind. The 6.8 acre site and three-story brick Italianate building designed by Louisville architect Charles J. Clarke—with a fireproof annex for storing stereograph plates--cost a little over $17,000.

Image: APH Superintendent **Benjamin Huntoon** in front of the Kentucky School for the Blind, ca. 1895.
Kentucky School for the Blind Collection, 2003.185.205

Image: "**A Blind Teacher Giving a Lesson**," at the Kentucky School for the Blind, from *Frank Leslie's Illustrated Newspaper,* June 19, 1880.

V.5

Object: New York Point alphabet card embossing plate, ca. 1885. APH Superintendent B.B. Huntoon introduced a "unique method of stereotyping, by which is secured a flexible stereotype plate, made of tin foil, amalgamated to a sheet of ordinary roofing tin" in 1884.
APH Collection, 2002.314.1

V.5.3

Embossing plates were time-consuming to make. Metal type was assembled in this tool, called a **composing stick**, before being transferred to a frame, called a galley. An impression from the assembled page of type was used to create the tin embossing plate.
Museum Purchase, 2007.21

V.6

Object: Reproduction **cell frame and hardwood pegs**. Introduced in 1887 to supply emerging kindergarten programs, the boards stimulated the development of motor skills and were used in math and writing tasks.

V.7

Object: Made in Louisville in 1888, the **McElroy Pointwriter** was one of the earliest mechanical writers. It wrote in New York Point, an alternative dot system.
Loaned by the Perkins School for the Blind

V.8 Section V Timeline

1880 Responding to demand from the ex-officio trustees—the heads of schools for the blind—50% of the company's products are embossed in New York Point.

1883 APH builds its own building with financial help from the state of Kentucky.

1884 Superintendent Huntoon improvises embossing plates from tin foil and roofing tin. He designs a new "double cylinder press" which prints 120 pages per minute.

Fun Fact: The first kindergarten program for blind children opened in Boston in 1887. APH sold kindergarten materials, including "squares of cardboard perforated for sewing, wooden cell frames for peg work, and hardwood pegs."

1888 APH begins marketing McElroy's Point Writing Machine, a mechanical writer developed by James McElroy of the Michigan School for the Blind and manufactured by Tafel Brothers in Louisville.

VI.1 Section Title

Too Many Codes

VI.2 Section Label

For decades, teachers complained that there were too many tactile codes. To access the books in a typical school library for the blind, a reader might need to know as many as five or six. Developments in a Chicago machine shop in the winter of 1892 laid the groundwork to change that.

VI.3 Section Quote

“After nearly a year's work with the stereotype-maker, I am led to believe that, as far as the education of the blind is concerned, this invention is the most important of the century, if we except the invention of a point print system by Louis Braille.”
John Sibley, 1893

VI.4

Object: The **Hall Braille Writer** (1892) was developed by Frank Hall, superintendent of the Illinois School for the Blind, and a local machinist, Gus Seiber. Hall’s machine, and the larger version he developed to prepare braille embossing plates, called a stereograph, paved the way for universal acceptance of the braille code.
Gift of Judy Dixon, 1992.358

VI.4.3

Image: The Pressroom, ca. 1900. To the right is the double cylinder press developed by Superintendent B.B. Huntoon in 1884. The Baxter steam engine that powered the press—installed in 1873--is barely visible in the left foreground.
APH Collection, 2004.134.49

Image: Kindergarten students at the Perkins School for the Blind in Boston, from *New England Magazine*, Christmas 1895.

VI.5

Object: APH introduced its **atlas of embossed maps** of the world in 1894-95 with embossed captions in New York Point.

Loaned by the Perkins School for the Blind

Object: Reproduction of an **embossed map** produced at APH in 1895.

VI.6?

VI.7

Object: Breezy Point, by Belle Marshall Locke, embossed in American Braille at the American Printing House for the Blind, 1899. American Braille was adapted by Joel Smith in Boston in 1878. Most books embossed in American Braille at APH before 1910 had been transcribed at schools in Missouri and Pennsylvania that preferred the system.
Gift of Mr. & Mrs. Fred Durham, 2000.100

VI.7.3

Image: Students at the Iowa College for the Blind, 1893. The Iowa school taught its pupils in both raised letters and the New York Point system. About the raging controversy between braille and New York Point, ICB Principal Thomas McCune wrote, “The prospect of a speedy settlement is not encouraging.”
2004.74.2
Museum Purchase, 2004.74.2

VI.8 Section VI Timeline

1892 Frank Hall and G.A. Seiber develop the first successful mechanical braillewriter in Chicago. A stereotype machine to prepare embossing plates soon follows.

1893 APH embosses its first books in “American” Braille.

1894 A major project is the composition and stereotyping of the Bible into New York Point for the American Bible Society. The company also introduces an atlas of tactile maps.

Fun Fact: The first “telephone instrument” was installed at APH in 1895. Invented in 1876 by Alexander Graham Bell, Louisville had a telephone exchange by 1879.

1897 Plates for braille books prepared at schools in St. Louis and Philadelphia on Hall’s braille stereotype machine are embossed at APH in ever increasing numbers.

1898 APH purchases New York Point stereotype machines from the New York Institute for the Education of the Blind. Production of new titles in New York Point doubles. The days of setting printing type at APH are numbered.

VII.1 Section Title

The Braille Explosion

VII.2 Section Label

The braille stereograph machine proved to be critical in resolving the debate over tactile codes known within the blindness education field as the “war of the dots.” At the same time, the machine made it possible for a massive expansion of braille production in the twentieth century.

VII.3 Section Quote

“The lamentable fact is that we have at present five distinct codes of embossed print… the blind reader must learn, and keep well up in all these codes." Charles W. Holmes

VII.4

Image: The **first expansion to the original building** was a second story built on the plate storage vault in 1900, a “fireproof store room” which held unbound books, pamphlets, and bindery materials
APH Collection, 2004.134.1

VII.5

Image: Susan Merwin, superintendent at the Kentucky School for the Blind, became the first woman to head the Printing House when she succeeded B.B. Huntoon in 1919.
APH Collection, 2002.134.7

VII.6

Image: APH Pressroom, ca. 1912. The original 1865 Ruggles press is in the left background and the 1884 double cylinder press is in the right foreground. Note the speaking tube to the right that allowed the press operator to call other parts of the building.

VII.7

Object: Clear Type Book, Our Insect Friends and Foes, Volume 3, by William A. Dupoy, published in large type in 1929 by the Clear Type Publishing Committee for “Sight-Saving Class Use.”
Gift of the Louisiana School for the Visually Impaired, 2000.108.5

VII.8

Image: Andrew Cowan (1841-1919), a Union Army veteran and local businessman, served on the APH Board from 1897-1919. He was president of the board during the fateful debates of 1909-1910 that converted 40% of APH production to braille and spelled the end for New York Point.
APH Collection, 2004.134.13

VII.9

Image: Girls weaving baskets at Camp Munger, Iona Island, NY, ca. 1925. The summer camp taught crafts, swimming, and domestic skills.
Museum Purchase, 2003.170

Interactive Unit explores the 1910 annual meeting that shifted production toward braille and the various arguments for an against and by whom.

VII.11 Section VII Timeline

1904 The APH catalog size increases dramatically, from fifteen pages in 1894 to a 100-page listing ten years later.

1905 The company's steam power plant is replaced by electric motors.

Fun Fact: Now known as the Little PEARL Companion, a 1905 machine for producing tactile maps is still in use today in the tactile graphics shop.

1907 APH embosses the New York Point Edition of the first issue of Matilda Ziegler Magazine, a magazine published for the blind. The Ziegler operation quickly establishes its own plant in New York and pioneers the practice of embossing on both sides of the page.

1910 Trustees move to devote half of plate-making capacity to the production of American Braille. After heated debate, and over the opposition of Superintendent Huntoon, the motion passes.

1913 In Cleveland, Ohio, Robert Irwin proves that low vision students can attend public school if provided with proper textbooks and light. He organizes a publishing company to produce books in large print.

1917 Discussions between American and British negotiators on a uniform English braille code break down. A Revised American Braille code is adopted instead.

1919 Following Benjamin Huntoon's death, his replacement is Susan Merwin, superintendent at the Kentucky School for the Blind.

VIII.1 Section Title

Rivalries

VIII.2 Section Label

Fierce competition for embossing contracts, particularly with the Universal Braille Press in Los Angeles, pressured the Printing House throughout the 1920s. Although created to serve children attending residential schools, the company also began to respond to an increasingly vocal community of blind adults, represented by the American Foundation for the Blind and its director, Robert Irwin.

VIII.3 Section Quote

“Embossed books produced at the American Printing House for the Blind have never been equaled and are the best of the kind in the world.”
Susan Merwin, 1920

VIII.5

Object: Pocket slate, postcard slate, and desk slate, ca. 1925. Following the purchase of the slate making equipment of the Cooper Manufacturing Company in 1924, APH introduced its line of seven braille and New York Point slate designs.
David Ronecker Slate Collection, 2001.211

VIII.6

Image: Architect Arthur Loomis designed **the 1923 west wing**. The Kentucky legislature paid for the new building, a two story brick, steel, and concrete building that doubled the capacity of the press room and bindery.
APH Collection, 2004.135.122

VIII.7

Image: Student orchestra at the Virginia School for the Deaf and the Blind in Staunton, Virginia, from the school’s annual report, 1921.

Image: Three students at the West Virginia State School for the Blind in Romney, West Virginia, from the school’s annual report,

1920. Apparatus such as the arithmetic slate used by the girl on the left was in short supply in the 1920s.

Image: Edgar E. Bramlette (1860-1929) served as superintendent of the Printing House from 1924-29. His primary accomplishment was the perfection of interpoint, or embossing braille on both sides of the page.
APH Collection, 2004.134.8

VIII.10

Image: APH Book Bindery, ca. 1925. Prior to the 1940s, most APH books and magazines were bound in a method known as saddle stitching.
APH Collection, 2004.134.149

VIII.14 Section VIII Timeline

1921 Susan Merwin creates a committee on tangible apparatus to develop special educational tools.

1923 A new wing is largely finished before Superintendent Susan Merwin dies unexpectedly in May.

1924 E.E. Bramlette, Superintendent of the Texas School for the Blind, is Merwin's replacement. APH purchases the slate-making machine shop of the Cooper Manufacturing Company, heirs of the makers of the Hall Braille Writer.

1925 In the summer, employees enjoy a trip to Rose Island, an amusement park on the Ohio River.

Fun Fact: The Belle of Louisville, then known as the Idlewild, arrived in Louisville in 1931 to run excursions to Rose Island.

1926 Braille dominates production at the company. Of 3,512,152 pages embossed at APH that year, 94% are in braille.

1927 A third story is added to the west wing. Under pressure from competitors, the company begins adapting machinery to "interpoint" braille on both sides of the embossed page.

1928 APH begins publication of *Reader's Digest* magazine in braille.

IX.1 Section Title

Adult books for Adult Readers

IX.2 Section Label

While the Great Depression was a disaster nationally, it was a time of growth and renewal at the American Printing House. The Pratt-Smoot Act of 1931 recognized that adults and children have different reading needs. The National Library Service for the Blind poured federal money into braille books for adult readers and a significant new product: talking books recorded on vinyl disks.

IX.3 Section Quote

"I believe that the libraries for the blind of the future will be stocked with phonograph records instead of braille books."
Robert Irwin, 1932

IX.4

Object: Dissected map of Africa. APH began carving wooden relief maps in the 1870s. By 1921, large dissected relief maps were available with a shellac finish. Painted wooden maps appeared in the middle 1930s. The political boundaries on this example date the map between 1932 and 1945.
APH Collection, 1992.269

Image: Two girls study a dissected map of North America made at the American Printing House, ca. 1930.
APH Collection, 2004.134.61

IX.4.5

Image: William Butler supervised the APH map shop in the 1930s and ‘40s. He created molds for the first map cast in hard rubber, the U.S. puzzle map, in 1939.
Photo courtesy the Louisville Courier Journal

IX.6

Object: The **Notation-Graph** was invented by Charles Beetz in Brooklyn in the 1930s. For the next fifty years it was one of the few tools in the APH catalog aimed at music education.
APH Collection, 1992.97

IX.7.5

Image: The **original talking book recording studio** at APH, 1936. A raised cork floor helped insulate the room from noisy printing equipment.
APH Collection, 2004.134.54

IX.8

Image: A.C. Ellis (1897-1947) was superintendent of the Printing House for seventeen years beginning in 1930. Initially resistant to the idea of recorded books, the studio and production line became his most significant achievements.
APH Collection, 2004.134.10

IX.9

Image: A **boy reads from a large type reader** in a Louisville, Kentucky "Sight Saving Class," 1935. APH produced an experimental large type book in 1936.
APH Collection, 2004.134.47

IX.11.3

Image: APH Shipping Department at leased property on South Brook Street, 1939.
APH Collection, 2004.134.49

IX.12 Section IX Timetable

1930 Andrew C. Ellis is hired as Bramlette's replacement. Like Bramlette, he was a former principal at the Texas School for the Blind.

1933 APH accepts the uniform English braille system adopted at the London Type Conference. The "War of the Dots" is over.

1934 A plate storage vault is constructed on State Street. Board member Ballard Thruston donates $1,000 to start the company's first endowment fund.

1935 Despite the Depression, braille production at APH increases from 4.3 million pages in 1929 to 13.3 million pages in 1935.

1936 APH establishes a recording studio and record production department, becoming the only institution in the world that manufactures talking books from start to finish. In the background, the first experiments with large type books are underway.

Fun Fact: The company was forced to close for three weeks during the Flood of 1937, but was undamaged.

1939 The first talking magazine, *Reader's Digest*, is produced. The plant is overcrowded. Stereotyping and printing equipment are moved to rental property on South Brook Street.

X.1 Section Title

Workers and World War II

X.2 Section Label

The world war that broke out in 1939 affected operations in unexpected ways. Materials shortages and missing skilled workers were facts of life. Afterwards, like the American economy overall, the company began a rapid expansion that had been delayed during fifteen years of depression and war.

X.3 Section Quote

“The Printing House is actually in production with large type books. We cannot promise you perfect books immediately, but we will try to make the best ones we can with constant improvements.”
Marjorie Hooper, 1947

X.4

Object: The **New Hall Braillewriter** was designed by APH as a sturdy, inexpensive model for school use. More than 4,000 were manufactured between 1941 and 1972.
Gift of the Ohio Resource Center for Low Incidence and Severely Handicapped, 1990.14.1

X.8

Image: During World War II, homes and businesses displayed **banners with stars** to commemorate their sons and daughters serving with the military. Twenty APH employees joined the armed forces during the war.
APH Collection, 1992.259

X.9.3 &.4

Object: More Streets and Roads was part of a basic reading series introduced by Scott, Foresman & Company in 1946. It was one of the first books APH converted in 1947 when it established its large type department. Copy was typed on an IBM electric typewriter, enlarged, and printed on an offset printing press.

Original Version
Museum Purchase, 2007.23

APH Large Type Version
Museum Purchase, 2000.81

X.10

Object: Marjorie Hooper (1908-1993) joined the APH staff in 1933. By 1943 she was the braille editor, with direct responsibility for all publications. Recognized internationally as a braille expert, she received the Migel Medal from the American Foundation for the Blind in 1958.
APH Collection, 2004.134.20

X.11

Image: By 1938, APH was experiencing severe growth pains. The board seriously considered a move from Frankfort Avenue. After renting extra space for several years, the company constructed a large wing behind the original structure in 1947.
APH Collection, 2004.134.2

X.12

Image: Finis Davis served as APH Superintendent from 1947 to 1976. A national leader in blindness education, he received the Migel Medal from the American Foundation for the Blind in 1973. Under his leadership, APH expanded into the largest printing house for people with vision loss in the world.
APH Collection, 2004.134.10

X.13

Image: Factory workers outside rented space at 825 South Broadway, 1946. L to R "Sis" Miller, Sadie Hodge, Catherine Hellman, Elizabeth Bader, Frances Richards, and Louise Covington.
Photo courtesy Helen Clark, 1999.7

X.14

Image: Students using braille textbooks, science class at the New York Institute for the Education of the Blind, ca. 1945.
Photo courtesy NY Institute for Special Education, 2003.17.1

X.15 Section X Timeline

1940 The New Hall Braillewriter becomes the first APH writer developed in house.

1942 A new ring binding method is approved to replace stitched bindings on APH braille books.

1943 The Printing House is declared an essential industry by city government. The company can now raise wages, but many skilled workers resign to join the army. Metals are hard to obtain in the wartime economy and APH recycles plates from older titles.

1946 Twenty employees who left to join the military return to Louisville safely. Construction begins on a large manufacturing wing behind the original building.

1947 Andrew Ellis dies and is succeeded by Finis Davis, superintendent of the Arkansas School for the Blind.

1948 The printing, binding, and tangible apparatus departments move into the new annex. In the midst of the post war baby boom, many female stereograph operators leave to marry and raise families. The large type department begins production of textbooks.

XI.1 Section Title

The Rise of Tangible Apparatus

XI.2 Section Label

In its first century, the Printing House focused primarily on sharing the written word. The creation of an educational research department in 1953, and its first two directors—Sam Ashcroft and Carson Nolan—signaled a commitment to the design and production of other educational aids. In 1950, the company made five types of maps and writing tools. By 1960, there were thirty-five different pieces of "tangible apparatus."

XI.4

Video: Newsreel, October 1958 issue of the Reader's Digest, "America's House of Braille."
Museum Purchase, 2006.49

XI.9

Object: Constructo, a building toy based on the popular Erector Set, was introduced in 1952. It was one of the first new educational aids to emerge from APH in the 1950s.
Education Collection

XI.13

Image: A tour visits **the globe molding shop**, ca. 1955. APH began production of its 30" tactile globes in 1954.
APH Collection, 2004.134.49

XI.14

Image: "Braille Class," Public School #2, Paterson, NJ, ca. 1955.
APH Collection, 2004.134.47

XI.15

Image: Louisville architect Arthur Tafel designed the **1955 APH Administration building** in the International (Bauhaus) style.
APH Collection, 2004.134.2

XI.16

Image: Alba Hudspeth at her clamshell press, dressed for a company open house, 1950.
Photo courtesy Alba Beech Hudspeth, 2004.134.21

XI.17 Section XI Timeline

1950 Congress passes the first minimum wage law, increasing the average APH worker's hourly rate from 70 to 90 cents.

1953 APH hires its first Director of Educational Research, Samuel Ashcroft, principal at the Iowa Blind and Sight Saving School.

Fun Fact: In 1953, APH furnished a complete pilot printing plant to the island nation of Cuba.

1954 The company introduces a health plan for its 180 employees. Ground is broken on a new administration building on the front of the original building, housing talking books in the basement and offices on the other floors.

1958 APH celebrates its one-hundredth birthday. A two-story cafeteria and storage structure replace the original east wing. Dr. Carson Nolan replaces Ashcroft as the head of Educational Research.

1959 APH produces a talking book version of Newsweek, the first recorded weekly magazine. APH produces more than half the talking books made in America. IBM announces the successful programming of a computer to translate print material into contracted braille.

XII.1 Section Title

Trends and Technology

XII.2 Section Label

A significant shift in the student populations served by APH occurred in 1960. More children with visual impairments were attending public schools than those in traditional residential programs. In the plant, new technologies such as photocopying and computers helped to keep up with steadily rising demand.

XII.3 Section Quote

“One of our most pressing problems is the vast increase in the number of children attending public schools, thereby making necessary a far wider variety of texts than ever before, but in fewer quantities of each individual title.”
Finis Davis, 1960

XII.4.1

Object: APH modified the **Sony 105 tape recorder** in 1968 with a tone indexing system and variable speed controls. The reel-to-reel system was replaced by more convenient cassette players in the 1970s.
APH Collection, 1992.11

XII.6

Object: Raymond Lavender from New York conceived the idea of a new, lightweight braillewriter in 1937. After working with APH engineers including Louis Krauss, Howard Oliver, and Virgil Zickel, the **Lavender Braillewriter** appeared in 1963. The machine’s plastic components, however, proved to be a weak point.
APH Collection, 1998.1

XII.10

Image: Narrator **Jim Walton**, a popular newscaster at WHAS in Louisville, reads in Studio Five as the monitor adjusts a Scully 280 hi-fidelity tape recorder.
APH Collection, 2004.134.54

XII.12

Image: Aerial View of APH, 1966.
APH Collection, 2004.134.3

XII.13

Image: Richie Lee, a student at the Kentucky School for the Blind, works a math problem on his cubarithm slate, ca. 1964. Cubarithm was introduced in 1953 and sold in the catalog through 1977.
APH Collection, 2004.134.62

XII.14

Image: Masking photo enlargements of large type textbook pages, ca. 1960. The transparencies were used to create a stereotype printing plate.
APH Collection, 2004.134.51

XII.16

Image: Painting 12" globes in the Educational Aids Department, 1967. APH began manufacturing the tabletop globes in 1959.
APH Collection, 2004.134.49

XII.17

Image: A **stereograph operator** fixes an embossing plate with a pair of correcting tongs, 1966. The IBM punch card reader which drives the stereograph machine is visible to the right.
APH Collection, 2004.134.49

XII.18 Section XII Timeline

1960 Production of the largest braille project ever undertaken begins: the 145-volume *World Book Encyclopedia*.

1961 Under the leadership of Carson Nolan, the Educational Research Dept. begins basic research on learning and vision loss.

1962 40,000 square feet is added to the manufacturing floor on the eastern side. A second addition on the west is built in 1967. Staff experiment with the Xerox photocopying process in Large Type.

1964 Computer braille translation begins when IBM presents APH with a main frame computer. An electronically-driven stereograph

machine reads computer-driven punch cards, speeding the process of preparing embossing plates.

1969 The company produces its first talking books on cassette tapes for the Library of Congress. Transistorized talking book phonograph players and tape recorders go into production.

XIII.1 Section Title

Testing the Limits

XIII.2 Section Label

Employment at the Printing House peaked in the summer of 1975 at around six hundred. The company, however, was on the edge of sweeping changes that stretched its abilities and cut the workforce in half.

XIII.5

Image: Anna Mae Ball saddle stitches the braille edition of *Reader's Digest*, ca. 1970.
APH Collection, 2004.134.49

XIII.6

Image: Margaret Snyder creates an embossing plate for a braille atlas on the Tactile Graphics Tooling machine, ca. 1970.
APH Collection, 2004.134.49

XIII.8

Image: A student from the Kentucky School for the Blind checks out an **APH Shoelace Aid**, ca. 1971.
APH Collection, 2000.94.1

XIII.9

Image: Carl Lappin, director of the APH Instructional Materials Resource Center, was responsible for creating the Central Catalog in 1972. For the first time, schools were able to quickly confirm the availability of accessible textbooks.
APH Collection, 2004.134.24

XIII.10

Object: The **APH Student Speech + Talking Calculator**, available between 1978 and 1982, was a joint project with Telesensory Systems, a leading accessibility technology firm founded in 1970 at Stanford University.
Education Collection

XIII.12

XIII.13

Object: The APH Modified **Talking Book Cassette Recorder**, model 5193A from General Electric, was available 1978-81. Based on models developed by GE for the National Library Service, it was similar to portable machines available from APH for the next thirty years.
APH Collection, 1994.15

XIII.14

Object: Baseball, introduced in 1976, followed actual baseball rules.
Education Collection

XIII.19 Section XIII Timeline

1971 Faced with inflation as a result of war in Vietnam, President Richard Nixon freezes price and wage hikes.

1972 Flexible records are produced for the first time and mailed directly to magazine subscribers. The Central Catalog of Volunteer-produced Textbooks and the APH Instructional Materials Reference Center are created.

1973 Cassette tape production begins. General Manager Finis Davis receives the Migel Medal from the American Foundation for the Blind.

1974 Braille Editor Marjorie Hooper and Head of Production Virgil Zickel retire. Between the two, they have 67 years of service to APH. General Manager Finis Davis announces his own retirement two years later.

1976 APH installs a new IBM model 360-65 computer in braille translation. Carson Nolan is promoted to General Manager. Record and cassette production in talking books set all-time highs.

Fun Fact: Heavy ice and snow in the late winter of 1978 shut the plant down for many days.

1979 Five recording studios are added during the 1970s, bringing the total to nine.

XIV.1 Section Title

Recession and Reorganization

XIV.2 Section Label

Economic recession forced the company to take a hard look at operations. Traditional management styles conflicted with a newly unionized labor force that resulted in the company's first strike in 1988.

XIV.3 Section Quote

"The problem was that the Printing House was pretty old-fashioned...the result of the same people being in management for long periods of time and never adapting to modern problems."
Dr. Carson Nolan

XIV.7

Image: Ken Coy applies a tactile overlay to a commercially available game board, ca. 1980.
APH Collection, 2004.134.49

XIV.8

Image: An operator feeds a clamshell press, ca. 1988.
APH Collection, 2004.134.49

XIV.9

Image: President Carson Nolan with Educational Research Director June Morris, ca. 1980. Dr. Nolan received the Migel Medal from the American Foundation for the Blind in 1989 for his pioneering research program at APH.
APH Collection, 2004.134.11

XIV.10

Image: Gary Davis crafted this mock-up of a machine to press symbols onto embossing plates--called **the PEARL companion**—in the APH model shop around 1985. The PEARL is a machine used to emboss plates with raised line graphics.
APH Collection, 1992.296

XIV.11

Image: Flexible record production line, ca. 1980. The last rigid vinyl record was issued in 1987.
APH Collection, 2004.149.54

XIV.12

Object: The **Light Box** was created in 1984, designed for developing awareness of light, color, and visual discrimination.
Education Collection

XIV.13

Object: The **Talking Apple Literacy Kit** was the Printing House's first software title when introduced in 1985. The kit included a computer tutorial, games, and a talking word processor. It required another APH product, the Echo Commander speech synthesizer, to function.
APH Collection, 1999.4.1

XIV.16 Section XIV Timeline

1980 A $2 million addition brings the APH facility to its present size (282,000 sq. ft.).

1981 The *Talking World Book* is produced on 290 cassettes and a 22 volume index. 350 production workers organize and join the Teamster's Union.

Fun Fact: Dr. Virginia Keeney became the first woman to serve on the APH Board of Trustees in 1981.

1982 The number of employees at APH falls under 500 for the first time in ten years.

1985 As the nation struggles with economic recession, sales are stagnant. APH produces its first computer accessories: Echo Commander and the Talking Apple Literacy Kit.

1987 Decreased federal support and a 6% drop in annual sales reinforces the company's drive to streamline production.

1988 The APH production staff goes on strike for three weeks in January. A database of accessible text books (CARL) is introduced,

named for Carl Lappin, founder of the Central Catalog. Dr. Carson Nolan retires in December.

1989 Dr. Tuck Tinsley, Principal at the Florida School for the Blind, becomes President at APH.

XV.1 Section Title

Renewal

XV.2 Section Label

Management in the 1990s emphasized customer service and streamlined production. The overall mission expanded to “promote independence” for both “education and life.” Technology that had become central to modern life--computers, data assistants, portable audio systems—increasingly adorned the pages of the company catalog.

XV.4

Image: Dr. Tuck Tinsley, former principal at the Florida School for the Blind and Deaf, became President of the Printing House in 1989.
APH Collection

XV.5

Image: Crystal Williams at the Kentucky School for the Blind models a **Handi-Cassette**, ca. 1990.
APH Collection

XV.6

Image: Will Evans demonstrates the use of the **APH Big Picture**, 1994. A camera in the hand-held device sent magnified images of ink print to a television monitor.
APH Collection

XV.7

Image: Nikki Saylor explores her **Companion2000 Talking Palmtop Computer**, 1994.
APH Collection

XV.8

Object: Engineer Deane Blazie developed the **Braille 'n Speak**, the world's first note taker with braille key input and speech or data output, in 1986. APH offered a student version in 1994.
APH Collection, 2003.151.1

XV.13

Object: The **Tactile and Visual Globe** was a standard globe covered with a tactile overlay manufactured at APH, introduced in 1994.
Education Collection

XV.15

Object: On the Way to Literacy was a series of tactile/visual storybooks developed in the early 1990s. Titles ranged from "Gobs of Gum" to "The Longest Noodle."
Education Collection

XV.18 Section XV Timeline

1991 Threatened with budget cuts from Congress over a failure to hire more staff with visual impairments, APH partners with agencies across the nation to recruit workers with suitable skills.

1992 The first InSights Art competition for artists with visual impairments is held during the annual meeting. Production begins to shift to on-demand, particularly in Braille and Large Type. Inventories of outdated material are dramatically reduced.

1993 Large Print introduces multi-colored book covers. Use of a new Xerox Docutech printer allows rapid production of Large Print textbooks.

1994 The Museum of the American Printing House for the Blind opens on the second floor of the original 1883 building. The company produces its first application of instructional video: *Discovering the Magic of Reading: Elizabeth's Story*.

1995 A company wide computer system is installed. Software research focuses on the Microsoft Windows platform.

1997 The APH accessible media database is renamed LOUIS and made available on the internet. Engineers from Toyota Motors consult with APH on productivity and cost reduction. Mitzi Friedlander becomes the first narrator to read 1,000 titles in the history of the National Library Service.

Fun Fact: When Charles Barr joined the APH Board in 1997, he represented the fourth generation of his family to serve.

XVI.1 Section Title

The Twenty-First Century

XVI.2 Section Label

One hundred and fifty years of operation transformed the American Printing House for the Blind from a supplier of accessible books for children to the largest manufacturer of educational products for people with visual impairments in the world. Although constantly developing products for a changing marketplace, the company continues to innovate in its traditional areas of braille, large type, and talking books.

XVI.3 Section Quote

"As APH grows into the twenty-first century, it will continue to find new ways to make the world a more accessible place for blind and visually impaired people."
Tuck Tinsley III

XVI.4.1

Image: Dolores "Sissy" Robinson examines copy from the **Xerox IGEN3.** New digital photocopying technology installed in 2005 allowed APH to almost double its production of high quality large print color textbooks.
APH Collection

XVI.4.2

Image: Model and pattern maker Tom Poppe works on a prototype version of "Scattered Crowns," a board game under development in 2007.
APH Collection

XVI.4.4

Image: Volunteers from the Kentucky School for the Blind explore **The World at Your Fingertips**, a tactile world map introduced in 2007.
APH Collection

XVI.5

Object: A print/braille version of the **Periodic Table of Elements** was a frequently requested item before it was introduced in 2007.
Education Collection

XVI.6

Video: Denver the Guide Dog, produced by the Discovery Channel for Animal Planet, 2001.

XVI.7

Object: The **Book Port**, new in 2003, downloaded and read text files in synthetic speech or recorded books with human narration from the internet.
Education Collection

Interactive: Talking Narrator Jukebox

APH Narrator Jukebox
Instructions

1. Select narrator from the menu above.
2. Enter number code on keypad to right.
3. Use headphones to listen.

11 Randy Atcher
12 Roy Avers
13 Barry Bernson
14 Burt Blackwell
15 Madlyn Buzzard
16 Dale Carter
17 Andy Chappell
18 Paul Clark
19 Ray Foushee
20 Jack Fox
21 Jill Fox
22 Mitzi Friedlander
23 Walter Gerard
24 Livingston Gilbert
25 William Gladden
26 Janis Gray
27 Ryan Halloran
28 Lou Harpenau
29 Butch Hoover
30 Rod Huff
31 Bruce Huntey

32 Erin Jones
33 Ed Kallay
34 Fred Major
35 Ken Meeker
36 Milton Metz
37 Art Metzler
38 George Patterson
39 John Polk
40 Shirley Reynolds
41 Terry Hayes Sales
42 Julie Shaw
43 Hugh Sutton
44 Hal Tenny
45 Gary Tipton
46 Jim Van Sickle
47 Van Vance
48 Alec Volz
49 George Walsh
50 Jim Walton

XVI.8

Toymaker Bud Froze invented the **Rib-It Ball**, also called "Jacob's Ball," for children with vision loss. The APH version, introduced in 2006, featured a simplified color scheme and non-allergenic materials for children with cortical visual impairment (CVI).
Education Collection

XVI.9

Image: The **Accessible Textbooks Initiative Collaboration** at APH introduced braille textbooks in 2001 that featured a unique binding, allowing the book to lie flat.
Education Collection

XVI.10 Section XVI Timeline

2000 Between 1996 and 2000, 173 new products hit the market from APH. In January, the company creates the Accessible Textbooks Initiative (ATIC) to improve the quality and speed of APH textbook production.

2001 Fred's Head goes live, an expert database listing tips and techniques for daily living and visual impairments. The company

installs a Braillo 400 high-speed braille embosser, which uses no embossing plates, a sticking point in braille production for the past 150 years.

Fun Fact: APH Vice President of Public Affairs Gary Mudd starred in a 2001 Animal Planet program on dog guides, *Denver the Guide Dog*.

2002 The Hall of Fame for Leaders and Legends of the Blindness Field is dedicated at APH. Thirty-two charter members are inducted, including Helen Keller, Robert Irwin, and Samuel G. Howe. ATIC develops a new large type process that delivers books in standard textbook size and full color.

2008 The American Printing House for the Blind celebrates its 150th anniversary.

Section XVII: Bones of the Building/Architectural Features

XVII.1

Bones of the Building: American Bond

The brick used to construct the original 1883 APH building was laid in a pattern known as American Bond, five layers laid length-wise, followed by one layer laid endwise. In the nineteenth century, Louisville had a thriving brick industry. It is likely that the brick used at APH was locally manufactured.

XVII.2

Bones of the Building: Architectural Iron

When the original 1883 APH building was renovated in 1993, workers discovered cast iron support columns buried in the walls. Cast iron was common in Louisville, which boasted a number of architectural iron foundries.

XVII.3

Bones of the Building: Here Comes the Sun

Prior to the invention of electric lights, industrial buildings needed large windows to let in daylight. The arched windows on the south wall of the museum, part of a style called Italianate, are the only

original windows that still look outside. The others were obscured by later construction.

XVII.4

Bones of the Building: Gaslights

Louisville was one of the first cities in America to install gaslights in its streets and buildings. The gas was generated by roasting coal and collecting the byproduct. The gas burning fixtures in the 1883 building at APH helped workers see on cloudy days. Only the valve is left from the original lamp.

XVII.5

Bones of the Building: Quiet Please

The first recording studio at APH was cobbled together in 1936 on the second floor of the original 1883 building. The strangely placed ramp is evidence of several inches of cork installed in the floor to insulate sounds of printing machinery pounding away nearby.

XVII.6

Bones of the Building: Fire!

In a building lit by burning gas, heated by steam boilers, and filled with paper, fire was a constant menace. When the western annex was built in 1923, it featured heavy automatic fire doors from J.F. Wagner's Sons Company in Louisville.

XIX.1 Section Title

Blindness 101: What Causes Vision Loss?

XIX.2 Label

What Is Blindness?
More than 150 million Americans use corrective eyewear to address minor vision problems. Blindness is a condition of severe vision loss. It is rare, however, that no usable vision remains. A person is considered legally blind in the U.S. when their sight meets one or both criteria:

- Visual acuity of 20/200 or less in the better eye with best correction
- Field of vision of 20° or less

Visual acuity, a measurement of clarity and sharpness, is determined on a familiar diagram known as the Snellen Chart. People with visual acuity of 20/70 or less after correction are defined as **visually impaired**. There are seven to ten million blind or visually impaired Americans.

XIX.3 Snellen Chart

XIX.4 Label

What Causes Blindness?

Our eyes are resilient but can be damaged by accidents, diseases, infections, and hereditary conditions. In the U.S., modern medicine has improved our chances of avoiding vision loss. The four leading causes today are all related to aging.

- **Macular Degeneration** involves gradual damage to the eye's retina, the cells that detect light.
- A **Cataract** is a clouding of the naturally clear lens of the eye.
- **Diabetic Retinopathy** is a common complication of diabetes. Abnormal developments in the blood vessels of the retina greatly increase the risk of vision loss.
- **Glaucoma** is a disease that affects cells of the optic nerve. As cells die, the peripheral vision is the first to shows signs of loss. It is the leading cause of blindness around the world.

XIX.5 Large diagram of the eye

XIX.6 Simulators

Objects: Low Vision Simulators *{nine pairs of goggles}*

The goggles on the rack below reproduce some of the effects of common serious visual impairments. Try to find the museum's entry in the Louisville phonebook on the rail while wearing a pair. Or see if you can distinguish the three types of canned soup on the wall.

XIX.7.1 Macular Degeneration, Early Stage
Visual acuity of 20/200

XIX.7.2 Macular Degeneration, Late Stage
Visual acuity of 20/400

XIX.7.3 Glaucoma, Early Stage
20° visual field & no impairment of visual acuity

XIX.7.4 Glaucoma, Late Stage
10° visual field & visual acuity of 20/80

XIX.7.5 Diabetic Retinopathy
Visual acuity of 20/100

XIX.7.6 Cataracts, stage 1
Visual acuity of 20/80

XIX.7.6 Cataracts, stage 2
Visual acuity of 20/200

XIX.7.6 Cataracts, stage 3
Visual acuity of 20/400

XIX.7.6 Cataracts, stage 4
Visual acuity of 20/800

Object: XIX.8 Louisville White Pages

Object: XIX.9 Three cans of Campbell's Soup

Callahan Gallery

THE CALLAHAN MUSEUM

The Callahan Museum tells the story of the educational history of people who are blind and visually impaired. Exhibits focus on tactile systems, writing devices, braille production, Talking Books, educational aids, and early schools.

A reader rail with braille labels, audio devices, and tactile illustrations runs along the front of the exhibits.

At the entrance to the exhibit area is an introductory video. Press the button on the reader rail to begin viewing. Continue left along the reader rail to begin your visit at the exhibit of early books embossed in various tactile systems.

For an audio introduction to the museum, please access the audio phone located on the countertop below.

THE FIRST BOOK FOR BLIND PEOPLE

1786-The First Tactile Book For Blind People
Valentin Haüy was an advocate of education, social reform, and human dignity. In 1784, he founded a school for blind children in Paris.

One of Haüy's students pointed out that he was able to identify the raised letters on and engraved invitation. This gave Haüy the idea that perhaps he could produce a printed page that blind people could read.

It proved to be a complex task. Haüy had to cast special, right-reading type and make a press with the power to emboss the raised letters.

The first mass-produced text designed specifically for blind people, *Essai sur l'education des Aveugles*, was typeset and printed in 1786 by the students at Haüy's school.

The letterforms used by Valentin Haüy were slightly modified Roman —the alphabet used in all Western European languages.

OIC: Essai sur l'education des Aveugles
Valentin Haüy
Paris, 1786
This was the first embossed book for blind people. Because Haüy wanted sighted teachers to be able to read the book, he inked the embossed letters. He glued the backs of the pages together to stiffen the pages and save space. Unfortunately, an unthinking bookbinder flattened the embossing on many of the books in the binding press.

Below: Reproduction of page from this book

Tactile Systems Based on Roman Letters
The earliest efforts to make reading possible for blind people employed a tactile version of the Roman alphabet. The letters of the Roman alphabet are used in all European languages. You are reading the Roman alphabet at this moment.

Raised printing began in France in 1786 when Valentin Haüy printed the first book in raised letters for blind people. The first book printed for blind people in England was embossed in 1827 using an angular version of the Roman alphabet.

In 1832 the Scottish Society of Arts formally recognized the embossed type of John Alston. Alston's version of Roman type was set in all capitals and the letters did not have serifs.

John Alston, along with many others, was a proponent of using the raised Roman type in books for blind readers. The argument for this type was that it allowed blind and sighted people to share the same alphabet. Any sighted teacher could teach the blind students using books embossed with Roman letters.

America's First Embossed Book

In 1833, Jacob Snider, Jr., recording secretary of the Pennsylvania Institution for the Instruction of the Blind, designed an alphabet in raised Roman letters and printed *The Gospel According to St. Mark* using this alphabet. The type design was a handwritten style with small, rounded Roman letters in upper and lower case. The book was printed at a Philadelphia print shop and was the only one embossed with this type.

Later, in 1837, when the Pennsylvania institution purchased its own press, another Roman type was used. Based on the type design of John Alston of Scotland, the alphabet was all capital letters with curved strokes. It was called Philadelphia line.

Boston Line Letter

Dr. Samuel Gridley Howe was the first director of the New England Asylum for the Blind (now Perkins School for the Blind). He studied tactile printing systems in Europe and developed his own system of raised type called Boston line letter. In 1835, Howe printed *Acts of the Apostles*, the first book produced in Boston line letter.

Boston line letter was an angular modification of Roman letters and had no capital letters.

The first books embossed at the American Printing House for the Blind were in Boston line letter. For more than fifty years, it was the predominant embossed type for blind people in the United States and the choice of most of the schools.

Tactile Codes Not Based on Roman Letters

During the early period in the development of tactile printing, some people questioned using raised type based on Roman letters. They said that the Roman letters were difficult to read by touch. They thought that tactile codes, or arbitrary systems, were more readable. These codes were composed of raised lines and shapes and dots representing letters of the alphabet. Their forms, however, were not related to the Roman alphabet. Ideas for tactile codes came from music, ancient writing like hieroglyphics, codes and ciphers used in diplomacy, and shorthand writing.

The First Tactile Codes
One of the first tactile codes not based on the Roman alphabet was designed by Englishman, Thomas Lucas. In 1833, he introduced a system of tactile signs based on a popular system of shorthand. It was a phonetic code with signs representing sounds as well as letters.

The Moon Tactile Writing System
Dr. William Moon was an Englishman who worked to develop a reading system that was "open and clear to the touch."

Moon lost his sight as an adult so he was familiar with the Roman alphabet. In the late 1840s, he designed a system that used some of the forms of Roman letters combined with arbitrary signs. Nine basic forms turned in various positions represented the twenty-six letters and four abbreviations. The reading direction is reversed at the end of every line where a guideline directs the reader to the line below. Because some of the signs had recognizable elements of the letters they represented, Moon type was easier to learn by people who had lost their sight after they learned to read.

The Moon system was so successful that at his death in 1847, Dr. Moon's system was in use in 419 languages and dialects. It is the only system other than braille that is in use today.

A Code Prevails
There were many debates among teachers and leaders in the blindness field over the merits of raised Roman letters versus arbitrary tactile codes.
The proponents of Roman letters argued that they were less isolating for blind people. Those who favored arbitrary codes thought that their simple forms were easier to read by touch.

It was, in the end, a code that became the standard reading system for blind people. The code was braille—named for its inventor Louis Braille who introduced it in 1837. Braille's code stood out dramatically from the other systems because it could be written with a slate and stylus. The other systems could only be produced on a printing press.

Braille eventually replaced all of the old tactile systems, and today it is the tactile reading system used by blind people all over the world.

OIC: Liturgy for the Blind
The Order for Morning and Evening Prayer According To the Use of the Church of England

1839, Glasgow, Printed in the Asylum, at the Institution Press by John Alston, Honorary Treasurer to the Asylum.

Alston’s type was considered the best, most legible, tactile letterform of the day. It was a sans-serif type which was unusual at the time and embossed in all capital letters.

Below: Reproduction of title page from this book

OIC: The Gospel According to St. Mark
1834, Philadelphia
Embossed by Jacob Snider
This was the first book printed in raised letters in the United States. The book was embossed in a handwritten style with small, rounded Roman letters in upper and lower case. The clean, even letters and smooth paper surface were the result of pressing an engraved copper plate on the front of a sheet of special paper—a new method Snider invented. The system ultimately proved impractical and this was the first and only book printed in the Snider system.
Below: Reproduction of a page from this book

OIC: Fables
by John Gay
1869, Louisville
American Printing House for the Blind (APH)
This book is an example of early Boston line letter. Notice that there are no capital letters. Round letters like "o" and "d" are angular so that they are easier to read by touch. APH embossed its first books in Boston line letter. Books in line letter continued to be popular through the 1880s.
Below: Reproduction of title page and text page from this book

OIC: Pilgrim's Progress
by John Bunyan
Embossed in T. M. Lucas's Embossed Stenographic Characters
1860, London
The Lucas System was a code that used numerous contractions and abbreviations. It was based on shorthand and was a phonetic system.
Below: Reproduction of page from this book

Key to T. M. Lucas’s System of Reading for the Blind

Quote on top near beginning of tactile code section:

“Those enjoying sight are too apt to think that what appears so nice to the eye must therefore be the best for the blind.” –Thomas Anderson

Image: Dr. Samuel Gridley Howe, 1801-1876

“The sighted have been talking to the fingers in the language of the eyes.” –Pierre Villey

Image: Dr. William Moon, 1818-1894

OIC: “The Improved System of Embossed Reading”
William Moon
Alphabet card in Moon Type

The dotted lines on the printed Roman letters indicate the parts of the letters that have been left out of the embossed so that they are more easily read by touch.

Below: Reproduction of key to Moon Type

LOUIS BRAILLE (1809-1852)
…known world-wide for the language he created for blind people--the language that bears his name

Louis Braille was born January 4, 1809 near Paris. When he was three years old, he injured his eye while playing in his father's harness shop. Infection set in, and the boy became totally blind. When he was ten, Braille entered l’Institut Royale des Aveugles in Paris. It was there that Braille attended a demonstration of a dot code called "night writing" presented by Charles Barbier. Young Louis was inspired and began working on his own code of tactile dots.

Louis Braille's system was revolutionary because of its simplicity. The cell has two three-dot columns and is a size that can be covered by the finger tip. The six dots can be arranged in 63 different patterns, allowing for single cell letters of the alphabet, punctuation marks, conjunctions, and common letter combinations.

Louis Braille was twenty when he introduced his system in 1829. It included a literary and a music code. Universal in application, Braille's symbols could represent anything that followed an accepted sequence. Braille codes have been created for mathematics, chemical tables and nearly all languages. The braille code in use today is essentially the same as Braille's final version published in 1837.

Braille taught his method to students at the Paris school, but it was not until after his death at the age of 43 that his system was officially adopted.

BRAILLE IN AMERICA
The braille system was introduced at the Missouri School for the Blind about 1854. According to legend, the students were delighted with the new system because they could write notes and love letters which their sighted teachers couldn't read. The Missouri School was the first in the country to officially adopt braille.

Bust: Louis Braille

OIC: "Recuell de Morceaux d'Orgue" - Braille

If anyone invents a new system of printing for the blind, shoot him on the spot. Michael Anagnos, ca.1918

The Search for a Uniform Type of Touch Reading
After 1900, few books were produced in the old Line Letter types. The systems using tangible dots prevailed because they were easier to read tactually, and they could be easily written. The dot systems used in the United States were New York Point and American Braille.

AMERICAN BRAILLE
Originally called Modified Braille, American Braille was developed in 1878 by Joel T. Smith, a blind teacher at Perkins School. Smith retained the six-dot braille cell but assigned the symbols on the basis of frequency of letter occurrence.

New York Point vs. American Braille

The decline of New York Point began in 1909 when the New York Public Schools, adopted braille as the standard tactile system. Others followed suit, and the next year, the American Printing House devoted 40% of the federal appropriation to embossing American Braille books. APH continued to print a few books from old New York Point plates as late as the 1940s. The *Matilda Ziegler Magazine for the Blind* continued its New York Point edition until 1963.

STANDARD DOT
In 1905 the Uniform Type Committee, comprised of American educators, was formed to study the tactile systems in use at the time.

The goal was to join with the British in adopting a single standard tactile system for the English-speaking world that would increase the number of books available to blind people. In 1913 the committee recommended discarding both American Braille and New York Point in favor of a new system called Standard Dot, another revised braille system.

REVISED BRITISH BRAILLE
The British used Revised British Braille which consisted of three levels: Grade 1, fully spelled out; Grade 2, moderately contracted; and Grade 3, highly contracted. The British would not replace their system with the American Standard Dot system and the highly contracted British system was unacceptable to the Americans.

REVISED BRAILLE GRADE ONE AND ONE HALF
Negotiations between English and American Braille authorities got nowhere so the Americans decided to adopt a uniform code for the U.S.--yet another revision--Revised Braille Grade 1 1/2, a compromise between Grade 1 Braille, with no abbreviations and contractions, and Grade 2, with many. Revised Braille Grade 1 1/2 was the American standard between 1917 and 1932.

Many American blind people had learned to read line letter type, then New York Point, then American Braille, then Revised Braille Grade 1 1/2. They did not welcome the idea of another change and almost everyone involved was glad to abandon negotiations for a uniform English Braille system for the time being.

1932: ENGLISH-SPEAKING COUNTRIES FINALLY AGREE

STANDARD ENGLISH BRAILLE GRADE TWO
It was not until 1932 that the British and Americans agreed and selected Standard English Braille Grade 2 as the uniform braille code. This was Revised British Braille with a few modifications.

NEW YORK POINT
In 1868 William Bell Wait, Superintendent of the New York Institution for the Blind, introduced his raised dot system, New York Point. Wait claimed that his system had all the advantages of braille and none of the problems.

The New York Point cell was two dots high and it varied in width. To save space, frequently used letters and contractions were given the least number of dots.

By 1870, New York Point had replaced Line Letter in most American schools for the blind**.**

O: Reproduction of a page of New York point
From *Kenilworth* by Sir Walter Scott
Embossed 1896 by APH

IMAGE: Students trace script letters to practice the muscular movements used in handwriting.

NEW YORK POINT

William Bell Wait (1839-1916)

William Bell Wait was the superintendent of the New York Institution for the Blind from 1863 to 1905. He was a leader in blindness education and was a founder and lifelong leader of both the American Association of Instructors of the Blind (founded 1871) and the Society for providing Evangelical Religious Literature for the Blind (founded 1874). He was one of the blindness educators who secured the 1879 grant from Congress for the publication of embossed books.

Wait devised the New York point system of point writing for blind people, a system that he adapted for music as well as literature. In 1900 Wait was presented with the John Scott Medal by the Franklin Institute of Philadelphia for his inventions of the Kleidograph, a machine for embossing the system on paper and the stereograph for embossing metal plates.

CASE RIGHT BELOW 'BATTLE OF DOTS' HEADING

OIC: New York Point Slate
Cooper Engineering and Manufacturing Co.
Chicago, IL.
Gift from Herbert Sowell
The simplest appliance for tangible writing. Paper is depressed by a stylus into grooves or cavities. The top plate serves as a guide for

making the points. Because the points are impressed downward, the paper must be taken out and turned over to be read.

OIC: Evangeline
Longfellow
Embossed in New York Point by the American Printing House for the Blind
1895

OIC: Kleidograph
William B. Wait
New York Institute for the Blind
ca. 1890
Wait designed a mechanical writer to write in his system and called it the Kleidograph (key writer). There are twelve embossing keys and a space bar. The top two rows of keys correspond to the eight points in the cell. The bottom row of keys are compound keys, and each key when depressed carries with it the two directly above it. Wait's ingenious design allowed the Kleidograph to be operated with one hand. This freed the other hand for reading.
Gift from New York Institute of Special Education

OIC: New York Point Desk Slate
Bronx: New York Institute of Education for the Blind
A top clamp secures paper on the board.

Next Case

O: New York Point Stereograph
Below
New York Institute for the Blind
ca. 1890
Gift from the New York Institute for Special Education

The stereograph was used to emboss metal plates used in production of tactile books in New York point. An operator depressed the keys of the stereograph causing a piston to strike the plate, creating raised dots. The plates were then transferred to presses to produce embossed paper copies.
2003.185.123a-b

OIC: Handpress for Pin Type
Invented by Johann Wilhelm Klein (1765-1848), Vienna
This device produced alphabet letters that could be read by touch or by sight. Wood types with letters formed with steel pins are arranged, reading from right to left, in the frame. Paper is inserted in

the frame over a felt backing. The types are pushed into the paper making pricked letters on the reverse side of the paper.
Students at the Pennsylvania Institution for the Instruction of the Blind were writing with pin type in 1833. The school produced the handpress for pin type and sold it to other organizations. This receipt, dated 1881, was for the purchase of pin type from the Pennsylvania Institution by the American Printing House for the Blind

OIC: Envelope addressed using pin type.

IMAGE; Visually impaired historian is famous for books originally handwritten on a noctograph

William Hickling Prescott (1796-1859)

Prescott was considered one of the greatest American historians. When he was a student, an eye injury left him severely visually impaired. He graduated from Harvard in 1814 and lived his life as a "gentleman-scholar." Prescott had a phenomenal memory and mentally composed whole chapters of his books during his morning horseback rides. Then he then wrote the book's manuscript using a noctograph. The illustration of Prescott in his study shows his noctograph on the table beside him.

OIC: Noctograph
Ca. 1810
A packet labeled "Semi-Carbonic Paper" and a booklet of copies of business correspondence dated 1811 came with this noctograph but are not currently on display.

In 1806 Ralph Wedgwood received a patent for a "Stylographic Writer" which was designed to enable blind people to write. It was difficult for blind people to write with a quill and ink, and pencils were not widely available. With Wedgwood's writing device the user could make carbon copies using a metal stylus with the guide. The key to the success of the device was Wedgwood's revolutionary invention—carbon paper.
Carbon (carbonated or carbonic) paper was made by soaking paper in printers' ink and allowing it to dry. This paper was fitted in the writing frame between two sheets of plain paper and a metal stylus was then used to transfer the ink onto the plain paper. The bottom sheet was the "original" and the to sheet, with writing in reverse, was the writer's copy.

Slate Drawer

2001.211.5
Interpoint braille slate
plastic with side extensions for inserting in notebook
Marburg, Germany: Deutsche
Blindenstudienanstalt
circa 1970

2001.211.2
8-dot Austrian shorthand slate
aluminum
Vienna, Austria: Lehrmittel Verlag

2001.211.62
Braille slate with Dymo tape slots
aluminum top plate with magnetic paper clamp
plastic bottom plate with furrows
Torino, Italy: M. Marsella

2001.211.55
Braille slate with tape-hinge
Orange plastic
[Germany]

2001.211.28
Small pocket braille slate
aluminum
[Austria?]

2001.211.75a-b
Small pocket braille slate
white plastic with simbraille alphabet and numbers on back
Madrid, Spain: Organizacion Nacional de Ciegos Espanoles

2001.211.31
Jiffy Slate
for brailling 3 x 5 cards
aluminum
Watertown, MA: Howe Press

2001.211.40
ACM Card Slate
aluminum braille slate for writing on keypunch cards
Watertown, MA: Howe Press

2001.211.17

Playing card slate
Metal slate for brailling cards
Watertown, MA: Howe Press
circa 1933

2001.211.27
Plastic braille slate
[Germany]
circa 1970s

2001.211.61
Interpoint braille slate with Dymo tape slots
aluminum
Marburg, Germany: Deutsche Blindenstudienanstalt

2001.211.65
New York point and braille pocket slate
metal slate for writing both dot codes
Chicago: Cooper Engineering & Manufacturing

2001.47
Braille pocket slate
metal
Chicago: Cooper Engineering & Manufacturing

2001.211.60
Upward-writing braille slate
clear plastic with top hinge through which paper is inserted
manufacturer unknown

2001.211.48
Ballu and braille pocket slate
Top brass plate for braille writing and bottom brass plate for writing10-dot high ballu, a system developed in Spain for embossing dots in the shapes of Roman alphabet letters. Aluminum middle plate has furrows.
Naples, Italy: Istituto Paolo Colosimo

2001.211.12
Ballu slate for writing10-dot high ballu
a system developed in Spain for embossing dots in the shapes of Roman alphabet letters
brass top plate and metal bottom plate with furrows
[Spain], circa 1880s

2001.211.45

Braille pocket slate
brass top plate and metal bottom plate with furrows
Naples, Italy: Istituto Paolo Colosimo

2001.211.52
Braille slate
heavy metal with furrows in bottom plate
manufacturer unknown

2001.211.9
Interpoint braille slate
aluminum with 9 lines of 20 cells
offset pins in top and bottom plates
Vienna, Austria: Lehrmittel Verlag

2001.211.25
Tylor Postcard Pocket Frame
aluminum micro-braille slate with pins in top plate for reading braille without removing paper
London, England: Royal National Institute for the Blind
[1930s?]

2001.211.6
E-Z Read Slate
aluminum pocket slate with pins in top plate for reading braille without removing paper
Watertown, MA: Howe Press

1992.26
Brown Slate
Gold-colored aluminum with an open section of frame for reading braille without removing paper
Louisville, KY: American Printing House for the Blind
1955

Drawer 4

2001.211.139
Interlining Braille desk slate
White plastic with back pegs to fit into a board
Made in Japan

1992.55.4
Interlining Guide for braille writing
Metal with back pegs to fit into board
London, England: Royal National Institute for the Blind

1992.21
Braille pocket slate
Metal with pins down in top plate for reading braille without removing paper
Manufacturer unknown

2001.211.50
Japanese braille pocket slate
Aluminum
Made in Japan

Drawer 6

2001.211.22
Japanese pocket braille slate
White plastic
Tokyo: Japan Braille Library

1992.27
Japanese pocket braille slate
White plastic
Tokyo: Japan Braille Library

2001.211.36
Japanese micro-braille slate
Ochre-colored plastic with an open section for reading braille without removing paper
Tokyo: Japan Braille Library

Drawer 8

2001.211.5
Interpoint braille slate
Plastic with side extensions for inserting into a notebook
Marburg, Germany: Deutsche Blindenstudienanstalt
Circa 1970

TACTILE WRITING

Many of the early tactile codes developed for blind people used characters that could only be produced with a printing press and an embossed plate. The codes that were made up of dots, however, could be easily written by an individual.

The Slate and Stylus
the pencil and paper for people who are blind

Charles Barbier, who, in 1808, introduced the dot system that was later modified by Louis Braille, also invented a writing frame for embossing his code. Braille simplified the frame to comply with his code enabling blind people, for the first time, to read what they had written and to write to other braille readers. The braille slate, used with a stylus that punches the dots, remains basically the same today as when originally invented.

The stylus punches dots downward into paper inserted in the slate. The paper must be turned over for reading. This means that braille is written from right to left on the slate, and written symbols are the mirror image of those used in reading. For finger readers, this is a readily acquired skill, although it may seem difficult to sighted people. Upward writing slates, which enabled the writer to emboss the braille dots on the face of the paper, were produced, but were not generally successful.

Collection of slates & styluses
Slates have been produced for many specialized purposes as well as general writing. Some slates are designed specifically for taking notes, and for writing postcards or checks.

In Case

The Brown Slate
American Printing House for the Blind (produced 1954—present)
Correspondence with the inventor, Robert Brown, led to the manufacture of this improved braille slate. The design allows the braille to be read without removing the paper.

OIC: Astrand Machine
Sweden
The combination Braille slate and writing guide was named for the inventor, Otto Astrand, a teacher at the Manilla School for the Deaf and Blind in Stockholm (1846-1870). Angular characters are handwritten by putting a pen in the small square of the movable slide. The two hinged flaps allow for ascenders and descenders. The Astrand Machine was used in Sweden until the 1920s.
Gift from Gunilla Stenberg, Director, Tomteboda Resource Centre for Visually Handicapped Children and Youth on occasion of the opening of the APH Museum.

Bookkeeping Frame
with Board
[London: Royal National Institute for the Blind]
Braille cells are arranged in bookkeeping columns.

1992.56
Braille Board Slate
Paris: Association
Valentin Haüy
Interpoint slate has a braille guide and a top-hinged frame for securing paper.

1992.18b
Braille Pocket Slate
Louisville: APH
Gold anodized aluminum.

1992.47 and 1992.36
Desk Slate with Board
The braille slate has pegs on the back to fit into the holes along the board.

1992.63
Washboard Slate for New York Point and Braille
Batavia, NY: C. Klimitz

1992.29
Braille Pocket Slate
Louisville: APH
Slate is made of glass-filled nylon.

1992.19
Braille Pocket Frame
London: Royal National Institute for the Blind

2003.185.121a-d
Direct Braille Slate
[Matrix Tool and Mold Company]
Lawrence S. Hawk, creator
Two upward-writing slates, one for jumbo braille and the other for standard braille, slide along the board.

1992.20
Braille Pocket Slate
Watertown, MA: Howe Press
Dymo tape slots in top plate.

1992.17
Postcard Slate
Louisville: APH

Gold anodized aluminum.

3 standing slates, left to right

2001.211.73
Braille Slate
Torino, Italy: M. Marsella
Slate has a sliding line gauge along the left side. Hinged magnetic clamps at the top and bottom secure paper. Bottom plate has furrows.

2001.211.101
Interpoint Braille Slate
Marburg, Germany: Deutsche Blindenstudienanstalt
Holes along the left side to fit 3 and 4-hole notebooks

1992.60
Braille Slate
manufacturer unknown
7 sections with 4 lines each of 37 cells

1 Upward-writing Labeling Slate
manufacturer unknown, Probably used to braille page numbers.
1992.25

2 Small braille pocket slate and stylus
manufacturer unknown
Used in the 1930s, the slate has furrows in the bottom plate.
donated by Avalon Starre
2003.203.1-2

3 Playing Card Slate
Watertown, MA: Howe Press, Used for brailling playing cards.
1992.24

4 Braille Memo Slate
[Tokyo: Japan Braille Library?], Top-hinged slate has a metal hook to hold a roll of paper.
2001.211.59

5 Jiffy Slate
Watertown, MA: Howe Press, Used for brailling 3 x 5 inch cards.
1992.23

6 Serdimat Wallet
Paris: Serdimat
The hinged slate, for brailling 3 x 5-inch cards, is attached to a bifold wallet with an inside pocket for storing extra cards.
2001.211.67

7 Upward-writing Braille Slate
manufacturer unknown, Paper is inserted through the top hinge.
1992.30

HANDWRITING

What if a blind person wishes to write a letter to a sighted friend? Suppose an official document requires a signature. There are instances when blind people cannot rely on writing in braille and need to use manuscript or cursive writing instead.

Writing guides have long been used to facilitate writing with a pen or pencil. A guide board may be constructed of cardboard embossed with raised lines or of wood with parallel metal bars. Today's guides are often made of metal. Some have flexible bands forming the lines so that letters extending above and below the base lines can be easily written. When learning to write, the blind student is taught to follow the pencil point with the index finger of his left hand to help with letter spacing, dotting *i's,* and crossing *t's*.

"As for cheap writing-guides, our printing-house for the blind makes one of superior finish at eight cents, and an article inferior in finish at four cents." *Reply to the Report of Committee of the American Social Science Association*, 1875, Trustees of the American Printing House for the Blind.

O: APH Signature Guide
The open frame has an elastic band that provides a guide for writing and flexes to allow for the descenders of letters.

O: APH Script Letter Board

OIC: Check Writing Guide

OIC: Writing Board
Arthur E. Tremaine
Wentworth Institute, Boston
1907

Loan from Perkins School for the Blind

OIC: Writing Board
Loan from Perkins School for the Blind

OIC: Guide for Addressing Envelopes

OIC: Practice Writing Book
1900-1912
Loan from Perkins Institute for the Blind

OIC: Dr. J. N. Rhoad's Writing Machine
1911
Made by J. E. Lineburner Co., Philadelphia
Loan from Perkins Institute for the Blind

OIC: Hebold Writing Frame – "Heboldtafel"
1880
This method for writing was developed by a German, Ernst Eduard Hebold (1819-1871). Trained as a teacher, Hebold taught at the Royal Institute for the Blind in Barby. His book, *School for Writing for the Blind,* was published in Berlin in 1859.

OIC: Blind-o-Graph
Patented and Manufactured by Orin C. Frost
New York
Loan from Perkins Institute for the Blind

OIC: Tablet for Writing Round Hand
Loan from Perkins Institute for the Blind

OIC: Hill's Writing Guide
Manufactured by C. G. Hill
Long Beach, CA
Loan from Perkins Institute for the Blind

IMAGE: Ad For Writing Board
Outlook for the Blind, April, 1919

OIC: Spencerian Writing Frame
Loan from Perkins Institute for the Blind

Helen Keller (1880-1968)
Helen Keller lost both her sight and hearing when she was very young. The story of how her teacher, Anne Sullivan, taught Helen to communicate using the manual alphabet is well known. She later

learned to speak, and studied at the Perkins Institution in Boston. She graduated from Radcliffe College with honors in 1904. Helen Keller spent her life writing, lecturing, and working on behalf of blind and deaf-blind people.

O: Portrait of Helen Keller
1907
Bronze
Winifred Holt

Artist and philanthropist, Winifred Holt, created this portrait of her friend, Helen Keller. When she touched the original model of her portrait, Keller was so pleased that she inscribed her signature in the clay from which the bronze relief was cast. The quote that is written on the plaque, "To be blind is to see the bright side of life," was a remark Helen Keller made to Edith Holt.

Gift of Ogden Newell and Welch

Winifred Holt (1870-1945) was a trained sculptor, but did not pursue art as a profession. She devoted her life to advocacy for education and training of blind people for which she received many honors. With her sister, Edith Holt, she founded Lighthouse International in 1905, and when she married Rufus Mather in 1922, he joined her work in support of the international Lighthouse movement.

IMAGE/OIC: A Letter from Helen Keller

On October 6, 1932, Helen Keller wrote a letter to APH employee Elsie Ottman thanking her for binding some of her books. Helen Keller wrote the letter while she was on a cruise aboard the SS President Roosevelt.

IMAGE: Copy of Helen Keller Letter
Elsie Ottman Humphrey (1904-1997) willed this letter to the museum.

IMAGE: Copy of envelope from the SS President Roosevelt

IMAGE: Helen Keller and Captain Fried
SS President Roosevelt, 1932
Photo courtesy American Foundation for the Blind Helen Keller Archives

IMAGE: Afternoon Tea

SS President Roosevelt, 1932
Left to right: Polly Thompson, Helen Keller's companion, Anne Sullivan Macy, Helen's teacher and companion, Helen Keller, Captain Van Beck
Photo courtesy American Foundation for the Blind Helen Keller Archives

OIC: Helen Keller's Bible (printed at APH)

IMAGE: Helen Keller reading

IMAGE: Helen Keller as a young girl

IMAGE of Helen Keller with Annie Sullivan

TALKING BOOKS

"phonograph books, which will speak to blind people..."

In his 1877 patent application for the phonograph, Thomas Edison listed "phonograph books, which will speak to blind people without effort on their part"--as a potential use for his invention. Since books for the blind offered no commercial promise, this application was not developed.

A 1920s study showed that only a small number of blind adults could read braille well enough to enjoy a book. There was clearly a need for recorded books, but recording technology was primitive--the common 78 rpm record played only a few minutes--a book would require hundreds of records.

1932-Talking Book Program Announced
American Foundation for the Blind (AFB) leads the way.

The not-for-profit AFB began laboratory experiments ***to perfect a long-playing record which would reproduce a satisfactory quality of recorded reading matter at a cost which would make practicable the recording of books.***

It was decided that the speed would be 33 1/3 rpm, since players for recordings at this speed would soon be available to the public. At this speed, a 60,000- word book could be recorded on eight or nine twelve-inch records.

The first talking book produced was Coleridge's *Rime of the Ancient Mariner*.

Talking Book Reproducers are a WPA Project

To meet the demand for players for the new talking books, their production was established as a Works Progress Administration (WPA) project. WPA projects provided work for unemployed Americans during the Great Depression.

The first WPA-produced machines were distributed in June 1936. In total, the WPA project produced 20,000 talking book machines.

APH Enters the Talking Book Field

Less than ten minutes ago I turned off my radio--returned home from taking in the Kentucky Derby. What a wonderful age in which we now live! Radio, abundance of literature in Braille, as compared with the past, and now--shall I add to it, "Talking Books?" **J. Robert Atkinson, Vice President and Manager, Braille Institute of America, in a May 5, 1934 letter to A. C. Ellis, Superintendent, APH.**

In February 1936, with the cooperation of Electrical Research Products, Inc., APH installed a model sound recording studio, along with processing and pressing equipment. In a few months APH was equipped to manufacture talking book records from wax recordings to the finished pressings.

1938--First APH Talking Book

The first book produced was *Gulliver's Travels* narrated by Hugh Sutton, followed that year by ***Silas Marner, Treasure Island, Pinocchio,*** **and the *Sketch Book*.** In 1938, thirty-two talking books were recorded.

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Talking Books for Adults

The Books for the Adult Blind project of the Library of Congress contracted with both AFB and APH for talking books, making an effort to divide the work between the two organizations to keep the prices competitive.

...and Talking Magazines

Beginning with the September 1939 issue, the Printing House produced a talking book edition of the *Reader's Digest. Newsweek Talking Magazine* began in 1959.

Talking Book Narrators

The success of talking books was due, in great measure, to the talents and professionalism of the narrators. The first narrators were men, radio actors who supplemented their incomes with talking book recording.

They were paid $5 for a finished "page," one side of a 15 - 20 minute record. The early recordings were made on wax that could not be corrected, so a mistake meant doing the whole side over again.

Talking Books Today

Talking books are recorded on 4-track cassette tapes at half the speed of a commercial cassette (15/16 ips). The cassettes and playback equipment are available to people who can't read printed materials.

Volunteers and Veterans
Providing specialized and supplementary literature for blind readers

After World War II, when blinded veterans entered college under the G.I. Bill of Rights, they needed recorded textbooks and materials and volunteer groups organized to provide them. One such group grew into the successful national organization, Recording for the Blind, which operates volunteer recording studios all over the country providing specialized and supplementary literature for blind readers.

OIC: Soundscriber
An office dictating machine, it used inexpensive small plastic discs which would hold ten to fifteen minutes of recorded material. This machine was the first playback machine for volunteer-recorded books.

OIC: Stand Microphone

OIC: Record Lathe
How does it work?
The record lathe used a cutting head which translated electrical waveforms into mechanical vibrations. These vibrations activated a cutting stylus which cut a record groove on the surface of a disc. The disc was then electroplated and a metal stamper was used to press thousands of records.

OIC: APH Record Production
The sound track is made on wax in a room kept below 65 degrees. After the recording the wax is taken upstairs and put in a refrigerator for a few hrs. before it's made into a master disc, a process of many steps, including acid washes and silvering. There's an upper and a lower master disc. Plastic is heated and placed between the discs and pressed.

OIC: An Isabelle Archer Dyer Memorial Record
The Talking Book for the blind utilized the principle of the long-playing phonograph record which was patented by Frank L. Dyer. Mr. Dyer gave AFB and APH the right to use his patent to produce records for the exclusive use of the blind. The only condition he imposed was

that the records carry the inscription, "Isabelle Archer Dyer Memorial Record" in memory of his wife.

OIC: Talking Book Machine (spring wound)
American Foundation for the Blind, New York
Made for the Library of Congress
1935
Gift of Alvin Roberts, Illinois Department of Human Services

OIC: APH Talking Book Reproducer
Model TR-1000
The American Printing House for the Blind in cooperation with Sandwich-Bowen Corp.
1958

OIC: APH Portable Cassette Player/Recorder
General Electric

OIC: The Adventures of Huckleberry Finn
Recorded at the American Printing House for the Blind
Narrated by Jim Walton
1962

OIC: The Last Talking Book Hard Disc
American Printing House for the Blind
May 8, 1987
Rigid discs were the first to be produced at APH in 1936 and, although they were virtually replaced by flexible records and cassette tapes, a few continued to be produced until 1987 when this last record came off the press. It was signed by the members of the Hard Record Department.

OIC: Portable Plus
Talking Book Record Player
American Printing House for the Blind
1990
Designed in-house, this player has variable speech compression, rechargeable battery and indexing capability.

OIC: Mark I Clark and Smith Tape Reproducer
Clark & Smith, England
1960s
Used in Canada in the mid 1960s, the cassette had 18 tracks providing 22 hours of listening. The cassette weighs six pounds.

OIC: Metal Masters
American Printing House for the Blind
These were used to stamp (flexible discs) or form (hard discs) the records.

OIC: Sony 105 Variable Speed Tape Recorder
Modified by American Printing House for the Blind
ca. 1976
Features of this modified recorder were the system of tone-indexing and a variable speed control. Gift of the West Side High School, Bakersfield, CA.

IMAGE: APH Narrator Pete French

IMAGE: APH Recording Studio, ca. 1936

Magazines for Blind People
One of the earliest U.S. magazines specifically for blind people was published beginning in 1867, by Napoleon B. Kneass, Jr. Kneass' Philadelphia Magazine carried articles of general interest.
The Matilda Ziegler Magazine for the Blind began in 1907 and was embossed in
braille, New York point, and Moon type. It is still being published.

Today,
national magazines are available in braille and recorded form.
The Reader's Digest was the first national magazine to be produced in braille as well as printed. The braille edition was introduced in 1928 by the American Printing House for the Blind. Today it is available both in braille and on tape.
The first weekly news magazine recorded for blind readers was Newsweek, which APH began recording in 1959 and continues to produce and distribute each week.

OIC: *Newsweek Talking Magazine*
Flexible disc edition
Recorded at American Printing House for the Blind

OIC: *Braille Mirror*
Published by the Universal Braille Press
Los Angeles, CA
November, 1926

This was a monthly “educational, secular periodical” published in Revised Braille Grade 11/2.

OIC: *Reader's Digest,* braille edition
American Printing House for the Blind
August, 1930

The braille edition of *Reader's Digest* was introduced by the American Printing House for the Blind in September 1928. Superintendent E.E. Bramlette suggested the idea of providing blind people with a readable monthly news and literary magazine and because of its diversity, *Reader's Digest* was selected. The publisher agreed to provide the copy royalty free. The Printing House began a national fund raising campaign to provide the magazine free to braille readers. This service, which has continued into the present, is made possible by donors throughout the country.

OIC: *The Moon*
The Moon Society, National Institute for the Blind
England
May 17, 1933

A weekly newspaper, *The Moon* was first published in 1906. It was printed in "Dr. Moon's Type for the Blind," a tactile system created by Dr. William Moon. Because of its size and similarity to Roman letters, it is easier to read by people who lost their sight later in life.

Moon Type was read in boustrophedon. Note the curved lines at the end of each line guiding the reading finger to the next line of type.
Gift of Barbara Schaefer

OIC: *Kneass' Philadelphia Magazine for the Blind*
N. B. Kneass, Jr., Philadelphia, PA
July 1892

Established in 1867 and published semi-monthly, this was the first American magazine specifically for blind people. The magazine carried articles of general interest, and was embossed in "the improved Combined Letter," a form of embossed type using capital and lower-case letters, which Kneass developed.

OIC: *Matilda Ziegler Magazine for the Blind*
New York Point edition
Matilda Ziegler Publishing Company for the Blind, Inc.
Monsey, NY
December, 1937

First issued in 1907, the *Matilda Ziegler Magazine* was offered in braille, New York Point, and Moon type. The first New York Point

issues were printed at APH, and, although schools for the blind quit teaching New York Point in 1917, the *Ziegler Magazine* continued printing its New York Point edition until 1963.

Electra Matilda Ziegler was the widow of a wealthy industrialist and mother of a blind son. When she read Walter G. Holmes' letter in a newspaper describing the need for embossed literature, she offered her help. She financed the magazine and Holmes was the editor until his death.

When Mrs. Ziegler died, she left a fund to insure the continued publication of the magazine that bore her name. The magazine is still in publication.
Gift of Harvey M. Nusbaum

IMAGE: APH Narrator Paul Clark reading *Newsweek* magazine, 1959 *Newsweek Talking Magazine* recorded at American Printing House for the Blind

The January 5, 1959 issue was the first of the *Newsweek Talking Magazine.* It was the first weekly news magazine to be recorded. A special fund, similar to *Reader's Digest* fund, was set up for the *Newsweek Talking Magazine.*

RR: Four pictures:-Wetting the paper so that it may take the heavy impressions of the raised dots.
-Feeding the prepared paper into the press (top)
-Blind workers stitching the pages of the magazine on a binding machine
-Girls assembling the printed pages for the magazine – the two at the left are blind, the first is deaf and dumb.

RR: Recording excerpt for the historic *Newsweek Talking Magazine* and *Reader's Digest*

Listen to an article from the National Affairs section of the December 1, 1958 issue of the *Newsweek Talking Magazine,* and stories from *Reader's Digest,* June 1947.

READING AND SPELLING
Beginning braille readers often learn to read whole words, or letter words, before they learn the alphabet. For example "g" stands for "go," "p" stands for "people," "c" stands for "can." Beginners can read sentences as soon as they learn a few characters, and this makes learning to read exciting. This is part of Grade 2 Braille, the system they will use all their lives.

Later in their education, braille readers learn Grade 1 Braille. Grade 1 Braille means using letters just as they are used in print. They need to be able to do this so that they can type or use a computer to communicate with sighted people.

O: The Swing Cell is a large model of a braille cell and is used to introduce the braille cell, raised dots, dot positions, and to help learn the layout of the keys on a braille writer.

Boston Line Alphabet Card

O: Patterns Booklet

OIC: Alphabet cubes

OIC: SPELLING CASE
This educational device was made by J. W. Schermerhorn & Co., New York City, ca. 1875.
Loan from Perkins School for the Blind

OIC: A FIRST READER FOR BLIND CHILDREN
Cheap First Reader, 1874, American Printing House for the Blind. The raised type was called Boston Line Letter. Children could learn the shapes of the letters by using an alphabet card like the one reproduced on the reader rail below.

IMAGE: BLIND STUDENTS AT PINEY WOODS COUNTRY LIFE SCHOOL, Braxton MS, 1933

OIC: SCRIPT LETTER BOARD
Blind children learned letter forms by tracing them with their fingers. This board was made from string glued to a board and shellacked.

OIC: BRAILLE PEG BOARD
Pegs represent braille dots in this braille teaching device. Blind students could arrange the pegs to create braille characters.

IMAGE: SOCIAL HOUR, BOYS' COTTAGE
Overbrook School for the Blind
Philadelphia PA
1930

OIC: UNIVERSAL SPELLING BOARD
"A set of Lettered blocks that children cannot toss or scatter around the floor."

This device was designed to help children learn spelling and letter recognition.
Loan from Perkins School for the Blind

IMAGE: CHILDREN OF THE HEART SUNSHINE SOCIETY
Hartford CN
1892

REFERENCE BOOKS

The bulk of tactile books have always been a concern, and reference books posed even greater problems of space.

Among the first reference books embossed for blind readers were *Howe's General Atlas* (ca.1836) and the *Cyclopaedia for use of the Blind, Compiled from Various Sources* (begun 1845) produced by Samuel G. Howe.

Quote: "Two hundred fifty copies of a three-volume embossed dictionary were printed in the mid-1870s at the Institution for the Blind at Philadelphia. Superintendent Chapin said that they saved as much space as possible by *confining the definitions to almost the synonyms, omitting all words not really necessary."* Mr. Chapin, AAIB Convention, Louisville, 1880.

The Philadelphia dictionary was praised by Otis Patten of the Arkansas School: *We have two copies of that dictionary printed in Philadelphia , and ... it is in constant use by our pupils, while other books in the Philadelphia print are hardly ever read. The dictionary is considered indispensable. We have one copy for the girls and one for the boys which are in constant use.* Otis Patten, Arkansas School for the Blind, 1880 AAIB Conference, Louisville.

In 1939, *Webster's Students Dictionary*, a 32-volume braille dictionary was printed as a joint project of APH and the Braille Institute of America in Los Angeles. Braille experts at both organizations had to determine the braille symbols for diacritical marks (the marks placed over letters to show how sounds are pronounced).

The First Voice-Indexed Dictionary

The first voice-indexed dictionary was produced in 1984 by APH for the National Library Service for the Blind and Physically Handicapped of the Library of Congress. The *Concise Heritage Dictionary* was

recorded on 55 cassettes in the 4-track, 15/16 inches-per-second format.

The APH Publication of the World Book Encyclopedia, Braille Edition and the Largest Braille Project Ever Undertaken
1959
The 145-volume of the *World Book Encyclopedia* in braille took two years to produce. The project was funded by the Field Foundation and Field Enterprises Educational Corporation.

The publisher of *World Book Encyclopedia*, Field Educational Enterprises, Inc., and the Field Foundation donated $115,500 to APH for the braille edition of the encyclopedia. This financed the original plates and the printing and binding of the first 250 sets which were distributed to schools and libraries specializing in the education of blind students.

Above: APH employees who worked on the project posed on the lawn with the completed encyclopedia. Each stack of braille volumes represents one print volume.

O: Right: The 145 volumes of the *World Book Encyclopedia Braille Edition*

IMAGE: Largest Braille Project in History
Newspaper clipping
April 10, 1959
The photograph shows J. McFerran Barr, an APH trustee, receiving a $115,000 grant from Adlai E. Stevenson, President of the Field Foundation, and B. K. Howard, president of World Book Encyclopedia. The grant financed the plates, printing and binding of the first 250 sets of the World Book Encyclopedia Braille Edition which were distributed to schools and libraries providing materials to blind students. The 145 volume encyclopedia required 43 feet of shelf space.

OIC: The *Talking World Book*—the first complete general encyclopedia to be recorded
1981
APH produced the first recorded encyclopedia. It was described as an "educational-resource miracle." The *World Book Encyclopedia* was recorded on 219, four-track cassette tapes. Each tape contained six hours of recorded material.

The encyclopedia was divided into 19 volumes, each containing 12 tapes and an index in both braille and large type. When the user

looked for a subject in the index, it listed the number of the cassette, the track, and the position for the entry. The specially designed cassette player had three knobs, each of which was set to the positions indicated. With the touch of a button, the machine located the article required.

O: Indexing Machine for the *Talking World Book*
The encyclopedia is divided into 19 volumes, each containing 12 tapes and an index in braille and large type. The subject index listed the number of the cassette, the track, and the position for the entry. The specially designed cassette player had three knobs, each of which was set to the numbers indicated. With the touch of a button, the machine located the article.

LARGE PRINT

Early large type books from the Clear Type Series published by the Clear Type Publishing Committee

OIC 1995.98
The Little Lame Prince
1926

OIC 2000.108.8
The Romans
1921

First Large Type Book Printed at APH
OIC: *Everyday Manners for Boys and Girls*
1936
In response to requests for large type books for children with low vision, APH printed a special sight-saving test edition of this book. It was distributed nationwide to determine interest and was well received. However, APH trustees decided that there were too few sight-saving classes to justify federal funding. APH began printing large type books in 1947.

OIC: Left: Printing plate and papier-mâché mat used in printing *Everyday Manners for Boys and Girls*
Below: Proof copy of page
The book was printed using hand set monotype. This method was expensive in small quantities, but produced high quality results.

IMAGE Robert B. Irwin (1883-1951) was a leader in blindness education.

Robert B. Irwin Established Sight-Saving Classes

One of the greatest handicaps under which the sight-saving classes are now struggling is the lack of an adequate supply of text-books in large print. – Irwin in a paper presented at the 24th Biennial Convention of the AAIB, 1918.

While supervisor of Cleveland public school classes for blind children, Robert B. Irwin organized the first sight-saving classes for low vision students in1913. Realizing the need for large print textbooks, he started a nonprofit enterprise, the Clear Type Publishing Committee, to publish textbooks in half-inch-high type for use in the classes. Examples of these books are in the case below.

IMAGE LEFT: A sight-saving classroom at the Virginia School for the Deaf and Blind, ca.1920.

IMAGE BELOW: Girl reading a large type book, Louisville public school classroom, ca. 1935.

OIC : The Optacon

The Optacon is a compact, portable reading aid for blind people. It works by converting a printed image into a tactile image that a blind person can feel with one finger.
The reader passes a scanner over a printed page. The image of a printed letter is converted into a pattern of vibrating pins which protrude through holes in the finger plate.
The Optacon (OPtical to TActile CONverter) was introduced in 1970. Production was discontinued in 1996 because of high cost versus low demand.

IMAGE: Boy using the Optacon
Optacon Owner's Manual
Telesensory Systems, Inc.
1978

The Optacon
1. Miniature camera
The camera is removed from the holder and passed across the print on a page
2. Tactile Stimulator Array
When the Optacon is operating, tiny metal vibrating rods protrude through the holes in the finger plate. The rods form the shape of the

letter being scanned by the camera. The reader places his or her left index finger on the finger plate to read the letter.

ACCESS TO THE PRINTED WORD--READING MACHINES

Machines that Convert Print to Tactile Form
A number of attempts were made to create devices that would convert print to tactile form, but none proved successful enough for general application until the Optacon was developed in 1970. One of the early devices was the Visagraph, introduced in 1931. The machine scanned a page of type and converted the letters to raised images.
Below: Article on the Visagraph, Popular Science Monthly, July, 1931

GEOGRAPHY

Students using tactile maps and globe at the Connecticut Institute for the Blind
Biennial Report of the Connecticut Institute for the Blind, 1907-8

(New York 1894 label in Geography exhibit; goes with photo that shows 2 boys standing in front of large relief map):

Students using a large relief map
25th Annual Report of the New York Institution for the Blind, 1892-93

Studying geography at the Missouri School for the Blind
A State School for Sightless Children
Missouri School for the Blind, ca. 1910

GEOGRAPHY PANEL 1

GEOGRAPHY

The first tactile maps for blind people were handmade.
Textures were added to printed maps. Relief maps were constructed using clay, wood or papier-mâché.

IMAGE: Map used by Maria Theresia von Paradis (1759-1824)
Photo courtesy of Bundes-Blindenerziehungsinstitut
Vienna, Austria
This is a print map that has been made into a tactile map with the addition of embroidered lines following the roads and various sized beads for towns and cities.

IMAGE: Maria Theresia von Paradis
A blind concert pianist and composer. Paradis liked to follow the routes of her concert tours on tactile maps that were handmade for her. One of her maps is in the Museum des Blindenwesens at the Bundes-Blindenerziehungsinstitut (Federal Institute for the Education of the Blind) in Vienna, Austria.

The sighted person perceives the whole object or scene at once, while the person reading by touch perceives the object in successive stages.

To make a map that blind readers can understand, tactile symbols are used in place of print symbols. Most of the devices found in print have no counterpart in embossing, and tactile maps must be greatly simplified.

There are two basic kinds of tactile maps.

Relief Maps—These maps show topographic features in relief. They are three-dimensional models of the terrain of an area. To emphasize relief, the vertical scale is usually several times the horizontal scale.
Tactile Symbols Maps—These maps use abstract symbols to represent geographic features or to mark political boundaries. Shape, size, and density of the tactile symbols help distinguish `landmasses, cities, roads, rivers, and divisions between countries, etc.

IMAGE TO THE RIGHT OF TEXT PANEL: Reproductions of paper maps from the
WPA Map Project at Perkins
In 1936, with a $30,000 grant from the Federal government, the WPA* undertook a project to produce some 350 embossed maps for blind students. Blind and sighted workers participated in the project, which was conducted under the supervision of the Perkins School for the Blind in Massachusetts. The maps were first embossed by hand on brass plates. The plates were then transferred to presses from which paper copies were embossed.
*WPA, the Works Progress Administration, was a Federal relief project established in 1935 to provide work for the unemployed. The WPA funded many and varied public projects throughout the country.

RR: Reproduction of tactile maps (several throughout section)

RR: Making a Relief Map
American Printing House for the Blind
1952

GEOGRAPY CASE 1 MAP LABELS

OIC: Embossed Map of the Southeastern States
This map is from an atlas first produced at APH in 1895. The text was embossed in New York Point. In addition to making wood maps, APH Superintendent, B. B. Huntoon, made plates out of press-board for every state and every country and had them embossed and then bound in atlas form.

IMAGE: Picture of Kunz
Relief map of Australia
Illzach: Blind Institute
1889

Martin Kunz (1847-1923), director of the Blind Institute at Illzach, was the leading producer of tactile maps in Europe during the 1890s. His goal was for every blind child to have his or her own map in the classroom. Press-formed from molds, Kunz's maps had prominently raised features and were distributed at schools for the blind in England, Australia, and the United States, as well as in Europe.

IMAGE: Students with Globe
Courtesy of William H. English, Wisconsin School for the Blind

OIC: Wooden Hemisphere Map
This map was probably produced by a teacher or student using a wooden bowl as a base. Teachers used many ingenious methods to make maps for their students.
Loan from Kentucky School for the Blind

OIC: Wood Relief Dissected Map
American Printing House for the Blind
c. 1880

APH produced hand made wood relief maps for school use. The maps were made by building up the relief with layers of wood, hand carving the mountains and valleys, and routing out the rivers and bodies of water using contour maps as guides. Large and capital cities were indicated by various types and sizes of upholstery tacks. They were selling for $200 in the late 1920s.

IMAGE: Teaching Geography Using a Relief Map
New York Institute for the Education of the Blind
Courtesy of New York Institute for Special Education

O: Asian Simplified Continental Relief Map
American Printing House for the Blind
The map is designed to be filled with water to cover the ocean areas. It is color-coded for visually impaired students – yellow land, blue water, red mountains.

O: Braille World Atlas
American Printing House for the Blind
1992

O: 36” Relief Globe
American Printing House for the Blind
1955

This relief globe was put into production in 1955. The Panoramic Studios of Philadelphia worked with APH on the design of the globe. In 1974, it was replaced by a new 30” globe.

O: Geophysical Globe
American Printing House for the Blind

IMAGE: Painting the APH Large Floor Pedestal Globe
ca. 1969

IMAGE: Student Using the APH Large Floor Pedestal Globe
ca. 1968

IMAGE: Preparing the Mold for the APH Large Floor Pedestal Globe
ca. 1959

RR IMAGE: Adding Color to Relief Map

RR Quote: “During the last year…the superintendent [B. M. Patten] has commenced the manufacture of raised globes and maps in this institution so successfully that this school has now a better supply of superior globes and dissected and wall maps than any other institution for the blind in the United States.”
1870 APH Annual Report

Maps and Globes in the 19th Century

There were few relief maps available in the 19th century and visually impaired children studied from maps made by their teachers. Maps were made with clay, paper-mache, muslin, wood, or metal – cities being marked with nails, and boundaries with string.

Dr. Samuel Gridley Howe of Perkins produced *Howe's Geography* and several other paper atlases. APH produced an embossed atlas in 1894.

In Kentucky, Bryce Patten began making wooden maps in 1870, and in 1874, Superintendent Huntoon was directed to "purchase from McBride a 'fleetwood scroll saw' for the purpose of more expeditiously manufacturing maps for the blind.'"

IMAGE: Blind Children Studying a Globe
1914
Neg. no. 335068. (Photo by Kirschner)
American Museum of Natural History Library

IMAGE: Seventh Grade Student Map
Pins and upholstery tacks form the outline of this map.
Loan from Perkins School for the Blind

OIC: Embossed Atlas of the World
Harald Thilander, printer
Sweden
before 1958
Harald Thilander (1877-1958), a Swedish printer, lost his sight when he was a child and later became hearing impaired. His print shop produced embossed maps and an atlas, as well as picture books and braille books and magazines. Thilander's maps use tactile symbols. Closely spaced, concave dots represent the water; smooth surfaces, the land; and dotted lines, the edges of the landmasses. Unlike other embossed maps, braille labeling was included on the textured (concave dot) areas.

IMAGE: Students using tactile maps and globe at the Connecticut Institute for the Blind
Biennial Report of the Connecticut Institute for the Blind, 1907-8

IMAGE: Students using a large relief map
25th Annual Report of the New York Institution for the Blind, 1892-93

IMAGE: Studying geography at the Missouri School for the Blind
A State School for Sightless Children
Missouri School for the Blind, ca. 1910

O: Metal Mold for Relief Map of U.S.

O: Dissected Relief Map of United States
American Printing House for the Blind
1950

ADVENT OF TECHNOLOGY'

IMAGE: Reproduced Clipping, *The Louisville Times*, June 1, 1964

The key punch had a conventional typewriter keyboard, so operators did not have to be trained in Braille transcription.
APH 1964

Operators typed text onto key-punch computer cards. The cards were fed through a computer that produced Braille and print texts for proofreading. After corrections were made, the cards drove a stereotype machine that produced metal plates for embossing Braille materials.
APH 1964

Braille plates were corrected by hand before computer Braille translation made it possible to proofread and correct a paper copy prior to embossing.

FIRST COMPUTER TRANSLATION OF BRAILLE
In 1957 the American Printing House for the Blind began a joint research project with IBM to apply computer technology to the production of braille books and periodicals. The computer system was fully operational by the fall of 1964.
The new system eliminated the manual operation of stereotype (embossing) machines. It was soon possible to reduce the translation of a 300-page book from six days of work by a skilled braille translator to one hour by a key-punch operator with no special training.

TODAY
Current braille printing begins with the text being entered on a computer keyboard. The coded form of the words to be reproduced in Braille is stored on a diskette which drives the braille output devices, TED and PED. The TED (text embossing device) produces interpoint braille text on paper for proofreading copy, and sometimes final text. The PED (plate embossing device) punches braille onto a double folded metal plate used in a printing press.

RR: Braille Translation System for the IBM 704
IBM Mathematics and Applications Department

In the 1950s, International Business Machines, in corporation with the American Printing House for the Blind, wrote an English text-to-braille computer translation program. In 1961, an IBM 709 data processing system was installed at the Printing House.

IMAGE ON RIGHT: In an earlier version of automated braille plate embossing, the operator typed on a braille writer, the keystrokes were recorded onto paper tape, and the tape recorder drove the stereotype machine.
APH ca. 1955

OBJECTS IN 3 CASES IN TECH SECTION

TYPEWRITERS

From their earliest production, typewriters were promoted for use by blind people. An 1875 ad for the Sholes and Glidden writer declared, "This machine is a great boon to the blind. They can soon learn to write with it. The attention of the teachers of the blind is especially invited."

As soon as they were available, typewriters were purchased by schools for the blind. In 1877 the Louisiana School for the Blind annual report noted the purchase of a typewriter. It was considered such an important acquisition that it was secured in a special room and students needed special permission to use it.

In 1876, Mr. Smead of the Ohio School for the Blind reported:

We are using in our Institution three of the type-writers. The simple principle is,--the types are operated by keys as on the piano. The operation is simple, but the construction is complicated. The practicability of its use for the blind is demonstrated by the use we have made of it. Our girls use it most. Previously, pencil-writing became so irksome to some pupils that they required seeing persons to write for them, now they can do to the type-writer and write for themselves....A blind amanuensis would be a practical thing with the type-writer. Ohio School for the Blind, 1876

...the needs of a particular group, the visually handicapped, urged some inventors to apply mechanical principles that ultimately were to be embodied in the typewriter, which in turn was to prove a special boon to the blind.
Richard N. Current, The Typewriter and the Men Who Made It, The University of Illinois Press, Urbana, 1954.

IMAGE:, Typewriting Class
In 1918, Miss Merwin delivered a paper, "Why Typewriting," to a convention of educators of blind students. In conclusion she said: The real purpose of typewriting as it should be taught in our schools for the blind is not to make typists of our pupils—some few may become successful in this field of endeavor—but its real purpose should be to help the blind to help themselves.
Miss Susan B. Merwin, Superintendent, Kentucky School for the Blind, from a paper "Why Typewriting?" read at the annual meeting of the American Association of Instructors of the Blind, 1918

IMAGE:, Blind Secretary

IMAGE: Reproduction, advertisement, "Especially Suitable for the Blind, New or Used Machines." *Outlook for the Blind*, vol. V, no. 1, April 1911

IMAGE: Newsletter, "The Red Cross Junior, Printed by the Typewriting Class, Louisville, Ky., June 4, 1918."

RR: Hall Type Writer Ad
Reproduction of letter from APH

OIC: Hall Type Writer
Hall Type Writer Co., Salem, MA
1881?
The Hall type writer was operated by moving the pointer to the hole over the desired letter and pressing down the pointer. It was used by many blind people.
Loan from Perkins Institute for the Blind

OBJECT LEFT OF HALL TYPE WRITER

FUNDRAISING

EARLY FUND RAISERS
The idea for a national source of embossed books grew out of fund raising efforts in the mid-1800s. Dempsey Sherrod of Mississippi and Morrison Heady in Kentucky were blind men who traveled in their regions soliciting funds—first for having specific books printed in raised letters, and later for the establishment of a printing house for the blind.
After the founding of the American Printing House for the Blind, "soliciting and collecting agents" were employed to raise funds for the

institution. The names of donors and the amounts of their donations, which ranged from .25 to $50.00, were printed in the annual report. Hinton L. Hall of Philadelphia began working on behalf of the Printing House as “General and Sole Agent” in 1871 continued, working without remuneration, until his death in 1905.

PROVIDING BUILDINGS, EQUIPMENT AND SPECIAL PROJECTS
In 1934 the need for an endowment fund for APH was recognized. Its purpose was to enable the Board of Trustees to provide books and apparatus to blind people who were unable to buy them. Trustee R. C. Ballard Thruston initiated the endowment fund with a gift of a $1,000 bond. By 1964, the endowment fund reached $1,000,000.

Celebrity Endorsements Aid APH Fund Raising
Celebrities and socialites wrote letters endorsing the Braille magazine and requesting donations to provide subscriptions. The high point in1949 fund-raising was securing endorsements from Herbert Hoover, Cordell Hull and Bing Crosby in addition to previous sponsors, Mrs. Emily Post of New York and Mrs. J.D. Winsor of Philadelphia.

1954 *Social Register*
Names of wealthy prospective donors were gleaned from this well-worn copy of the Social Register.

“The *Reader’s Digest*; The Story of the Braille Edition”
American Printing House for the Blind
1935
At a special meeting of the Board of Trustees, it was decided that a copy of this booklet should be sent to a list of former donors to the Braille Digest Fund and

Reader’s Digest
In a resolution at the July 1935 APH annual meeting, the trustees launched a nation-wide campaign to raise funds to provide free subscriptions to the Braille Edition of the *Reader’s Digest*. In addition to granting permission for the braille reprint, *Reader’s Digest* publisher, DeWitt Wallace, was most enthusiastic about the Braille Edition and supportive of the fund drive.

Donors to the Printing House Were Listed in the Annual Report
1860

Need 6 photos on RR, description of fundraising appeals

Mechanical Writers

Wall with two inset cases
[1992.344]
Foundation Writer
Made by L. C. Smith & Corona Typewriters, Inc.
for the American Foundation for the Blind
1933-1947
Gift of Judy Dixon
The Foundation developed this new model in their experimental shop in 1932 and contracted with the typewriter manufacturer to produce the machines. The entire writer is polished stainless steel.

New Hall Braille Writer
Designed and manufactured by the
American Printing House for the Blind
1940-1972

Designed to be suitable for school use, the New Hall was the modernized version of the original 1892 Hall Braille Writer. Research proved that the original Hall had great merit, and APH engineers decided to update the design, adding new features that included a line spacer, back spacer, margin regulator, and carriage release. The use of commercial typewriter parts kept costs low. The New Hall was produced for over thirty years.

Right of Hall and Foundation objects:
1.
Banks Pocket Braille Writer
Invented by Dr. Alfred Banks, ca. 1928
Produced by IBM, New York, ca. 1947
Gift of Mary Higgins

The writer embossed on a half-inch wide tape. It was made available nationwide through Lions Clubs.

2.
Marburg Tape Printer
Marburg, Germany: Deutsche Blindenstudienanstalt
ca. 1960

Compact stenographic braille writer embosses on rolls of paper tape. Skilled writers can achieve up to 300 syllables a minute. The front section opens to reveal the keyboard and the rear section opens to the paper chamber.

3.

Picht Braillewriter
Invented by Oscar Picht (1871-1945), Berlin
ca. 1900

The “Schnellschreibmaschine” has wooden keys topped with ivory. On the front end of each key are six metal dots, with one dot raised higher to indicate the dot that will be embossed.

4.
Lavender Braille Writer
Designed by Raymond Lavender
Produced by the American Printing House for the Blind
from 1962-1982

The Lavender was a modernized braille writer with the paper exiting through the cover similar to a typewriter. The keys are rectangular and the design compact with no protruding parts. The case and snap-on cover are made of Cycolac, a high impact resistant plastic.

5.
McElroy’s Point Writer
Made by Tafel Brothers Manufacturers in Louisville
for the American Printing House for the Blind (APH)
1888
Loan from Perkins School for the Blind

James F. McElroy, superintendent of the Michigan School for the Blind (1880-1887), patented his writing machine in 1888. APH purchased the rights for $300 in 1887 and produced 47 writers in 1888. It was listed in the APH catalog from 1889-1893.

The McElroy was one of the earliest upward writing devices and was designed to emboss dots in the New York Point system. The embossing carriage moves along a track mounted on a wooden frame. The two keys are hollow styli and force the paper into the matrix to produce dots. The matrix is a strip of copper embossed with raised two-dot cells.

6.
Tellatouch
New York: American Foundation for the Blind
ca. 1950
Gift of John Watson, State of Washington Special Education Materials Clearinghouse and Depository

The Tellatouch was designed for sighted people to communicate with deaf-blind braille readers. The keyboard has three rows of alphabetic keys and a braille keyboard on the fourth row. The deaf-blind person rests a finger on the braille cell located on a metal plate at the back of the machine. Pins rise to form the braille equivalent of the letter key that is struck. A product of a 1940s AFB research project dedicated to the needs of deaf-blind people, the Tellatouch helped end social isolation for hundreds of deaf-blind children and adults.

7.
Midget Braille and Point Writer
Chicago: S. J. Seifried
ca. 1890
Gift of Judy Dixon

S. J. Seifried designed and produced this writer that embossed either braille or New York Point. It has three keys and a cell spacer that moves the carriage at half spaces. Three keys were used to write braille and two keys for New York point. Seifried's company also made the early Hall braille writers.

8.
Light Brailler
Japan
ca. 1950

This type of braille writer is called a "crab writer" for the sideways motion in which keys and carriage move together across the paper. It functions like a hand slate with the carriage moving from right to left and writing downward.

9.
Hall Braille Writer
Chicago: Harrison & Seifried
ca. 1892
Gift of Judy Dixon

Modeled on the typewriter, the Hall Braille Writer was the first successful mechanical point writer. The carriage moves one space to the left as the keys are released. The styli in the embossing heads are controlled by the keys and operate from the back so that letters appear in the normal position for reading.

10.
Minerva Pocket Braillewriter

Germany
ca. 1900
Gift of Royer-Greaves School for the Blind

A very small braille writer, the Minerva has cylindrical ivory keys which angle away from the rectangular space key. The body is glossy black enamel. It uses 5-inch wide paper that feeds between rubber rollers and is stored inside the stationary hollow drum.

11.
Erika Picht Mini Brailler
Leipzig, Germany: Mechanische Werkstatt fur Blindenhilfsmittel
Gift of Judy Dixon

A small writer for 5 ½ x 11 inch paper or index cards, it has a black body attached to a bright red metal base. The keys are wood with ivory overlay.

IMAGE: Frank Haven Hall, 1841-1911

IMAGE: Original Hall Braille Writer
OIC: Original Hall Braille Writer
Frank Haven Hall, superintendent for the Illinois School for the Blind in the 1890s, invented the first mechanical braille writer and introduced his invention to the public on May 27, 1892, in Jacksonville, Illinois. The machine enabled blind students to produce braille faster and easier than embossing by hand using a slate and stylus.

IMAGE: of Perkins Brailler

Perkins Brailler
(Perkins Braillers are located on the display rail for hands-on use)
Designed by David Abraham
Produced by the Howe Press of Perkins School for the Blind
Watertown, MA
1951

Abraham designed the writer so that it would be easy for children, as well as adults, to use. Its features are lightness of touch, quiet operation, and a locking device that prevents paper from falling out of the machine. The fixed carriage with movable punch and die box prevents accidents and damage that could occur with a movable carriage. Entirely enclosed in aluminum plates, with keys projecting only slightly, the braille writer is very sturdy and not easily damaged. This is the current “classic” model for school and general use.

Right of 11 cases

1.
St. Dunstan's Braillewriter
Croyden, England: Redwing Ltd.
1949

Developed at the research department of St. Dunstan's, this machine is upward writing and designed for easy operation by one hand. It has many features of modern braille writers including: levers for backspacing and carriage return; a metal strip with braille numbers on the carriage indicating the carriage position in the braille cells; line spacing accomplished by manually turning paper feed knobs; and paper fed from the back of the writer.

St. Dunstan's is an organization in London dedicated to "caring for men and women blinded in the service of their country."

2. (1990.2.1)
Atkinson Portable Braillewriter
Invented by J. Robert Atkinson (1887-1964)
Los Angeles: Braille Institute of America
ca. 1945

J. Robert Atkinson, founder of the Universal Braille Press, now called the Braille Institute of America, Inc., designed this writer so that paper would remain flat during brailling. The paper table moves under a stationary embossing head. Its appearance is quite different from other braille writers, with the keys and space bar mounted at the top of a rectangular case.

3. (1992.343)
Improved Stainsby Braille Writer
Made by V. L. Martin Co. Ltd., England
for the National Institute for the Blind, London
ca. 1910
Gift of Judy Dixon

This is one of the models sometimes called "crab writers" for their sideways movement and six keys that extend, three on each side of the carriage. In the original design, the carriage moved from right to left along a track and the braille was formed downward, as with a slate. This model could be ordered with either the reversed or ordinary keys that produced braille as it is read.

4.
Picht “Stenographic” Braillewriter
Germany

Writer for taking notes in braille. It embosses on paper tape.

5.
Anderson and Sorensen Writer
Copenhagen, Denmark
ca. 1950
Gift of Judy Dixon

The body of the writer is painted red. Keys are brown plastic.

6. (1992.364)
Pyke Glauser Braille Writer
London: Royal National Institute for the Blind
ca. 1920
Gift of Judy Dixon

An upward writing model, the paper feeds from the rear and passes under the space bar. The machine has no paper feed rollers. The only movement is that of the carriage from left to right.

7. (1992.357)
Erika Picht Portable Braillewriter
Germany: Robotron Export-Import
ca. 1960
Gift of Judy Dixon

This portable model of the Picht is painted blue and has wooden keys covered with white simulated ivory.

8. (1992.412)
Perkins Braillewriter, Model C
Watertown, MA: Perkins Institution for the Blind
ca. 1900

This braille writer has six conventional keys, a backspace key on the left side, and a center space key. Paper rolls around the wooden roller inside a stationary drum. The frame is cast iron with black enamel finish.

9.
Boston Braille Writer

Boston: Perkins School for the Blind
1910
Loan from Perkins School for the Blind

Innovations introduced on this machine are a carriage release lever located on the top right side of the machine and the first self-operating carriage feeding mechanism. The braille writers produced at Perkins were called “Boston Braille Writer” for only a short time. The name reverted to the previous “Perkins Braillewriter.”

RR: Perkins Braillers for visitor use

Products for Students
APH partners with the Federal government

In 1879, An Act to Promote the Education of the Blind was passed by the U.S. Congress and signed into law. In this legislation, APH was assigned responsibility for providing accessible educational materials for students working at the pre-college level who are blind and visually impaired.

The amount of Federal money – or appropriation – APH receives each year to produce specially designed educational tools and materials is determined by the President of the United States, the U.S. Department of Education, and the U.S. Congress.

Appropriation funds are used to buy APH products for eligible students in each state and outlying area through the Federal Quota Program. APH Ex Officio Trustees manage these spending accounts.

APH Ex Officio Trustees conduct an annual registration of students within their states or outlying areas who meet the definition of blindness. This number is used to determine the amount of Federal Quota funds available for each eligible student across the U.S.

Each year, APH staff members teach professionals, parents, and students across the country how to use APH’s accessible products.

**The U.S. Puzzle Map seen in the background can be taken apart to learn about each state’s size, shape, and landforms. It is just one of many unique APH products.*

<u>Questions/Answers on RR</u>
(One by itself at left)
What is the name of the Federal law that defines the role of APH as a manufacturer of education materials?

The Federal law that defines APH's role as a manufacturer of education materials is An Act to Promote the Education of the Blind of 1879.

Can you name the branches of the Federal government that work with APH to provide specially designed materials for the education of students who are blind and visually impaired?

The branches of the Federal government that work with APH to provide accessible educational materials for students who are blind and visually impaired are the Executive Branch (the President and the U.S. Department of Education) and the Legislative Branch (the U.S. Congress).

How are Federal Quota dollars spent?

Federal Quota dollars are spent when Ex Officio Trustees order teaching tools made by APH that will be used by students who meet the definition of blindness.

Where do the blind and visually impaired students who use APH products live?

The students who use APH products live across the United States – some probably even live in your hometown!

APH Ex Officio Trustees
Administer the Federal Quota Program

An Ex Officio Trustee of the American Printing House for the Blind is designated for each residential school for the blind, state department of education, and agency for the blind that participates in the Federal Quota Program

Responsibilities of APH Ex Officio Trustees are to:

- Register students and adults working at a pre-college level each year who meet the definition of blindness.

- Provide information about APH products and services to educators, rehabilitation professionals, parents, students, and other service providers.
- Maintain products purchased with Federal Quota funds and oversee their distribution and reuse.
- Project future product needs and advise APH staff on product development.
- Participate in the annual meeting of Ex Officio Trustees held in Louisville each fall.
- Serve on advisory committees that provide guidance to APH, such as deciding which APH products can be purchased with Federal Quota funds.

The Educational Products Advisory Committee (EPAC) of Ex Officio Trustees reviews products under development and considers approval of finished products for purchase with Federal Quota funds. EPAC members in 2010 were: (l-r) Marty McKenzie, South Carolina; Linda Lyle, new Mexico; Stacy Grandt, Wisconsin; Yvonne Ali, Missouri; Todd Reeves, Pennsylvania; and Nancy Niebrugge, Chair, California. (Not pictured: Suzanne Dalton, Florida.)

The Educational Services Advisory Committee (ESAC) of Ex Officio Trustees provides oversight and leadership in the planning, evaluation, and delivery of services that support APH products. ESAC members in 2011 were: (l-r) James Olson, Colorado; Sally Giittinger, Nebraska; Jonn Paris-Salb, California; Marjorie Kaiser, South Dakota; and Patrick Clancy, Iowa.

A/V Unit

Try the **APH Cable Network** to hear more about APH's partnerships with elected officials, educators, vision professionals, and students. Select a button to change the channels!

Students demonstrate how APH products help them learn.

APH Ex Officio Trustees explain their responsibilities.

Government leaders speak about APH's national role in education.

TACTILE GRAPHICS

For blind students to understand the information in an illustration or diagram, it must be converted to tactile form.

The first embossed illustrations were unreadable by blind people because they used the visual conventions of line, perspective, optical illusions of depth, color, and shading. A building drawn in perspective is meaningless to a person who has never seen.

Graphic representations of maps, and math and science diagrams are more successful and easily read than pictures.

The APH Department of Educational and Technical Research, a leader in tactile graphics research, has conducted extensive studies to determine the most readable tactile symbols.

The most recent APH advancement in tactile graphics is the use of "puff ink" which can be applied as a liquid and becomes raised when it is dried by a heating process.

O: Model, Plate Embossing Apparatus for Raised Lines (PEARL)
Gary Davis
ca. 1985
This is a full scale wood model of the PEARL machine which embosses printing plates for tactile graphics. It is currently in use in the APH plant.

IMAGE: Photo caption: Mistakes in Braille plates were corrected with a hammer and correcting tool.

TWO-SIDED EMBOSSING

Interpointing is embossing on the reverse side of the page so that the dots appear between the lines and also between the dots on the first page.

It's hard to imagine why interpointing would be so controversial—but it was. Even though technology made interpointing possible in the early 1900s, sighted teachers objected to its use in school books because it was harder to read by sight.

The Matilda Ziegler Magazine led the way to interpoint, printing two-sided pages on a rotary press in 1912. The Universal Braille Press in California was an early producer of interpoint.

"We are ready to do bi-page printing."
E.E. Bramlette, Superintendent, APH Annual Report, 1922

Even though APH was ready to interpoint in 1922, the Ex Officio Trustees considered interpoint printing to still be in the experimental stages. *Our Own*, an interpoint Braille magazine, was published by APH on a trial basis in 1927.
The 1928 annual report states, “We are now well equipped to do interpoint printing of books and magazines in the most expeditious manner and at greatly reduced prices.” Nevertheless, the resistance to the new method continued, and in a letter Superintendent Bramlette said that he “ran upon a concentrated bunch of critics in regard to our new process of printing on both sides of a single plate.” In 1931, APH received enthusiastic approval for their interpoint printing from educators who recommended that all non-technical books above fifth grade be done in interpoint.

RR: Sample of Interpoint braille
Notice that each side of the page has raised dots and holes for the dots on the other side. Feel the braille dots, then touch the holes. You can feel the raised braille dots, but not the inverted braille dots. This is why interpoint looks very confusing to sighted people, but is perfectly legible to finger readers.

RR:
Telegram (ca. 1932) from Robert Irwin, Executive Director of the American Foundation for the Blind, to A.C. Ellis, APH Superintendent, ordering APH stereotyping machines.

PROFESSOR HUNTOON AND HIS IMPROVEMENTS
Benjamin B. Huntoon became the superintendent of APH in 1872 and immediately put his mind to improving the process of printing in raised letters.
Huntoon devised several methods of making stereotypes using readily-available materials. When the invention of the stereotype maker ended the need for these other methods, APH was quick to embrace the new technology. The 1898 inventory of the composing room lists “six stereographing machines and shafting and belting for operating same.”

The American Printing House for the Blind was established in 1858 to provide embossed books for blind students.
APH purchased its first press in the early 1860s. The press was designed and produced by Mr. S.P. Ruggles of Boston who also designed the first press at the New England (Perkins) Institution.

FIRST BOOK PRINTED IN 1866
The press was located in a room at the Kentucky School for the Blind

and the first book, *A Book of Fables and Stories for Children*, was printed in raised letters in 1866.

POWERING THE PRESS
The APH press was converted to steam power with the gift of a Baxter Steam Engine from the Colt Arms Manufacturing Co.

The Baxter steam engine, that runs our press, has given entire satisfaction. It uses less than two buckets of coal a day, and has needed no repairs during the year, though running regularly every day. And while ours is the only printing establishment for the blind in the world, where steam power is used to run the press, the results have proven its efficiency and economy.
W.F. Bullock, President, APH, Sixth Report, 1874.

RR: Baxter Steam Engine (reprint of sales ad)

The APH press was converted to steam power with the gift of a Baxter Steam Engine from the Colt Arms Manufacturing Co. The engine was patented in 1868 and manufactured by Colt from 1869 to 1894.

O: APH Stereotype
ca. 1964
This was one of the early automatic stereotype made at APH. It could read cards or tape and was sold by special order, primarily overseas.

Stereotype Machines Manufactured by APH

Operators used a keyboard on a stereotype machine to emboss braille dots on metal plates. The metal plates were then attached to a platen press for embossing braille materials.

In 1932, APH tested several stereotype machines that were designed to make interpoint (embossing on both sides of the paper) braille plates. The stereotyper designed by the American Foundation for the Blind was selected for production. APH supervised the manufacture and assembly of the machines which were manufactured at the W. R. Martin Co. in Louisville.

In 1936 APH produced a stereotype machine called the American Printing House Model Duplicate Plate-making Machine. It made two identical embossing plates in one operation, enabling U.S. and British braille producers to exchange plates and publish books jointly.

IMAGES
American Printing House Model Stereotyping Machine

American Printing House Model Duplicate Plate-making Machine

APH Model Stereotyping Machines produced at W. R. Martin Co.

Shop drawings for APH Stereotyping Machine

Other Photos in Tactile Graphics Section

TACTILE PRINTING
EMBOSSED PRINTING DEMANDED NEW METHODS
A special type had to be cast for the first raised-print book in the eighteenth century. The type had to be right-reading—the reverse of ordinary printing type—because the type was stamped into a sheet of heavy paper to make a raised impression on the other side.
Early printing presses were first run by hand and later by steam power and presses were developed especially for embossing.
To increase both speed and production, multiple printing plates (stereotypes) were made from the type using a papier-mache or plaster mold. A stereotype for embossing braille could also be made by punching out Braille dots on a metal sheet with a stylus and mallet.

STEREOTYPE MAKER
Frank Hall's 1893 invention of the stereotype maker revolutionized tactile printing.
The stereograph maker (or stereotype machine or stereotype or stereograph) mechanized the method of hammering the dots into the metal and eliminated the need for making molds and casting the stereotypes.

TACTILE PRINTING PIONEERS
The first schools did their own printing on a limited basis, but the New England Institution for the Education of the Blind under the direction of Samuel Gridley Howe was the most active. Howe announced, in 1836, that the institution had "a beautiful and powerful press—invented and manufactured expressly for the purpose of printing for the blind." It was obtained at considerable expense after many experiments and trials with the common and powerful presses; and … will soon give to the blind a better library than now exists."
Samuel G. Howe, Annual Report of the Trustees of the New England Institution for the Education of the Blind. Boston, 1836.
Two years later, Howe wrote that his press had tripled the quantity of English language material in raised letters and had printed the New Testament, a Universal History, and geography,grammar, and spelling books. In 1842, Howe completed the entire Bible in raised letters.

In an 1876 speech, B.B. Huntoon spoke about the confusing array of type styles produced for blind people:
Thus Virginia began to print in the French type of Hauy, changed to the Glasgow or Philadelphia capital, abandoned it for the Boston letter, and now uses the combined type of Kneass. Missouri was enthusiastic for the Braille system of points and now under the exercise of an enlightened judgment favors the New York Point. Kentucky has printed in five different alphabets and thinks perfection by no means attained.
Huntoon, 1876 speech in Philadelphia on "Printing for the Blind in the U.S."

IMAGE: Stereotype operator, Pennsylvania Institution for the Blind, 1895

IMAGE: Printing room, Illinois School for the Blind, 1904

O: Stereotype Maker ca. 1900
A later version of Hall's original machine, this model was used primarily for making map plates at APH. The pedal-operated stereotype makers in the photos above are nearly identical to this one which has been motorized.

IMAGE: APH rotary press, 1912 photo
APH Superintendent B. B. Huntoon designed this press which was built in 1879 by John Spencer of Illinois. The original ca. 1860 APH press is visible in the background.

IMAGE: Connecticut School for the Blind press room, 1904
Blind people worked as press operators at this school.

IMAGE: Press operators at APH, ca. 1955

IMAGE: Stereotype Maker
Invented by Frank H. Hall and introduced at the Columbian Exposition in Chicago in 1893
". . . as far as the education of the blind is concerned, this invention is the most important of the century, if we except the invention of the point system by Louis Braille. These two form the immovable pillars upon which the future education of the blind must rest. When the value of both is well understood by all, printing embossed matter will be carried on so rapidly and so economically that libraries will grow and flourish like vegetation under a tropical sun."
John T. Sibley, Superintendent, Missouri School for the Blind

IMAGE: Platen Press, Howe Memorial Press, ca. 1880

When Samuel Gridley Howe died in 1876, the printing department at Perkins was named the Howe Memorial Press in his memory. Perkins' first press was obtained in 1835. It was a Ruggles press similar to the first APH press shown above.

IMAGE: Printing office, Overbrook School for the Blind, 1899

Far Left Side Images:
Above
In 1884, Benjamin B. Huntoon introduced a new method for making a flexible stereotype plate. A sheet of tin foil embossed with tactile letters was amalgamated to a sheet of roofing tin and the resulting plate was used on the double-cylinder rotary press that Huntoon designed.

Right
Jake Steffen, APH machinist, in the machine shop, ca. 1935

Upper left
Stereotype operator, APH

Middle left
Collating Braille Readers Digest, APH

Lower left
APH stereotype operator working on a duplicate plate-making machine

In 1936 the American Printing House Model Duplicate Plate-making Machine was designed to produce two identical braille plates in one operation so that presses in different countries could produce joint publications. The project was abandoned when an APH experimental project with the National Institute for the Blind in Great Britain was unsuccessful.

Far right side
IMAGE: Huntoon and McCann Patent, 1909
B.B. Huntoon, APH superintendent, and Owen McCann, APH plant mechanic, received a patent for a method of embossing alternating lines of raised characters (interlining) simultaneously on both sides of a sheet of paper. [Patent drawings]

RR: Hands-on in Stereo!
Before Frank Hall invented his stereotype machine in 1893, embossing plates were cast at APH from handset type in a process developed by Superintendent B.B. Huntoon. You can

feel lines around the letters that show where individual types were set into the type frame.
RR Revised Braille Alphabet Stereotype Plate, ca. 1918 *{arrow right}*
RR New York Point Alphabet Stereotype Plate, ca. 1884 *{arrow down}*

IMAGE: First Press Used at APH
Samuel P. Ruggles designed and built the tactile printing press for the American Printing House in 1863.

IMAGE: APH Print Shop, ca. 1890

CLIFTON
THE APH NEIGHBORHOOD

As Louisville development moved eastward along the Frankfort turnpike and rail line in the years following the Civil War, Clifton became a center of both industrial, residential and commercial development. Primarily a working class neighborhood, Clifton development peaked in the 1880s.
The community took its name from "Clifton," the country estate of Joshua Bowles which once dominated the area.
Two hundred goats grazed the hillside near Payne and Spring, the site of Whalen's Goat Farm, and, when the area was subdivided, it was named "Angora Heights." Clifton residents were not impressed and promptly renamed the area "Billy Goat Hill."

IMAGE: Left side, Looking east on Frankfort Avenue at the Railroad Crossing.
Caufield & Shook Collection, Photographic Archives, University of Louisville
IMAGE: Franklin School
1892
Photo courtesy Jefferson County Public Schools

IMAGE: Young's Pharmacy
Corner Frankfort and Pope
1938 photo
Caufield & Shook Collection, Photographic Archives, University of Louisville

IMAGE: Northwest aerial view from the Kentucky School for the Blind cupola, before 1967
Courtesy of the University of Louisville Photographic Archives

IMAGE: “Clifton”, the Bowles Mansion
Built 1842, razed 1959

IMAGE: Liebert’s Clifton Market and Saloon
photo courtesy Tom Burkhart

IMAGE: Liebert’s Clifton Market and Saloon (interior)
photo courtesy Tom Burkhart

IMAGE: AERIAL VIEW
Kentucky School for the Blind, American Printing House for the Blind, and the surrounding Clifton neighborhood between 1927 and 1947. Note the numerous trees and park-like setting.
Photo courtesy of Special Collections, University of Louisville

FROM THE 1891 ANNUAL REPORT, KENTUCKY SCHOOL FOR THE BLIND
The land now held by the State for use of the blind forms a beautiful park of twenty-five acres in extent, bounded on each of its four sides by a wide street and covered with beautiful forest trees. It is the intention of the Board of Visitors to secure for this land a complete collection of native Kentucky trees, and they have already planted specimens of one hundred and fifteen different varieties.

RR IMAGE: A&P Food Store
Corner Frankfort and Pope
1938 photo
Caufield & Shook Collection, Photographic Archives, University of Louisville

Orientation & Mobility

How Do People With Vision Loss Get Around?

Many of us take our ability to travel independently for granted, but people who are blind or visually impaired regain that freedom by mastering special techniques and travel aids. Orientation and Mobility are core skills for daily living.

First Steps (Far left)
From ancient times, a walking stick was a handy tool. Most blind people rarely traveled without a sighted companion, but some taught themselves to use a stick to avoid falls and obstacles. There were no formal methods, each person figured out a practice that worked for their own needs. A few early teachers experimented with travel techniques. J. W. Klein in Austria suggested the use of dog guides.

Francis Campbell tested a long cane himself in Boston in the 1860s. W. Hanks Levy in England laid out theories for cane use and design in 1872 similar to those used today. But these remained ideas only until the twentieth century.

Concept: Orientation—Knowing where you are, what direction you're traveling, and your position in relation to landmarks in your vicinity.

Concept: Mobility—Moving safely and efficiently from where you are to where you want to be.

IMAGE: Man with dog and support cane, ca. 1870. APH Collection, 2003.114

IMAGE: Man with white support cane in front of shop, 1946. APH Collection, 2000.123

QUOTE: *The importance to every blind man of acquiring the power of walking the streets without a guide can scarcely be exaggerated."* W. Hanks Levy, 1872

Sighted Guides

Although O&M training facilitates independent travel, even veteran travelers might occasionally use a sighted guide. For some people, a sighted guide may be their primary mobility aid. Learning how to use a sighted guide is another step in basic O&M instruction. The person being guided walks a half step behind the guide, gently grasping the guide's arm just above the elbow. The guide holds her arm relaxed and steady at her side. Tactile information communicated through the motion of the guide's arm allows the user to follow movements up or down, and to the left or right. When approaching a narrow pathway, the guide moves her arm to the middle of her back, cueing her companion to move directly behind her.

Diagram: Making Contact, Grip, Stance, Switching (Changing from one side of guide to the other)

Dog Guides

Modern O&M began at dog training schools in Germany after WWI. In 1928, Morris Frank of Nashville traveled to Switzerland, where dog breeder Dorothy Eustis was experimenting with the German methods. When Frank returned with his dog "Buddy," he was a changed man. Partnering with Eustis, he founded the Seeing Eye, the first dog guide training program in the U.S.

Frank, Eustis, trainer Jack Humphrey, and later staff at Seeing Eye developed a total system, from breeding, raising, training, and matching a dog to potential master. Dog guides were trained to lead their owners in a straight path down a sidewalk, pause at intersections while awaiting a specific command, and avoid stationary obstacles, overhead hazards, and other pedestrians. Their owners remained in command, using other clues to remain oriented and determine direction changes. But the dog was also trained to "intelligently disobey," if a handler gave an order to take a dangerous step. Each successful task was rewarded with praise, just as errors required an immediate correction.

Initially, the concept of dog guides was resisted by leaders in the blind community. Dog guides were not for everyone. Even today, only about 1% of people who are blind in the U.S. rely on a dog as their primary method of O&M. Dogs are fast, requiring a fit and active handler. Although trained to be quiet and well-mannered, they require regular care, feeding, and attention. Obviously, a dog is a public proclamation of blindness. The ability of users to negotiate even the most complicated street scenes, however, convinced blind leaders of their ultimate usefulness. Morris Frank was initially refused entrance to restaurants and public transportation. But laws were passed allowing access for service dogs to all public areas. Today there are ten major dog guide training centers in the U.S.

Concept: Dog Guide Breeds—Dog guides are chosen based on size (45-70 lbs), intelligence, temperament, and working qualities. The three most popular breeds today are Golden Retrievers, Labradors, and German Shepherds.

Concept: Weather Resistance--unlike other travel aids, dog guides are not confused by wind and rain, and can usually maintain their line in snow and ice.

IMAGE (under monitor): Morris Frank, Dorothy Eustis, and "Buddy," 1936. Eustis was a wealthy socialite interested in working dogs. Her 1927 Saturday Evening Post article about dog guides in Germany attracted the attention of Morris Frank, who had lost his vision four years earlier in an accident. Together, they founded the first dog guide school in America, in 1929. AER Warren Bledsoe O&M Archives, 2007.33.1.145

IMAGE (on RR near guide dog label): Eleanor Brown, a Dayton, Ohio schoolteacher with "Topsy," her guide dog from the Seeing Eye, ca. 1940. APH Collection, 2004.134.33

IMAGE (pop out large image in front): Morris Frank with "Buddy", ca 1929. Early photos often show Frank with a support cane in his off hand. In later photographs, the cane was not part of his mobility equipment. Courtesy The Seeing Eye, Inc.

OIC(far left): Dog Guide Harness, ca. 1930. The Nashville name plate identifies this as one of the earliest surviving examples of a Seeing Eye harness. The school moved to New Jersey in 1931. The design was still a work in progress. The early handle was too flexible to effectively communicate a dog's motion to its owner. Loaned by The Seeing Eye, Inc.

AV UNIT
AER Bledsoe O&M Archives Video Jukebox
Press a button to enjoy a historic O&M film from the Bledsoe Archives.
The Long Cane, 1953, tells the story of a recovering veteran going through the Hines Blind Center. Produced by the Veteran's Administration, it featured actual staff and trainees including center chief Russell Williams.
Fight for Mobility, ca. 1958, was produced at WCRV-TV in Philadelphia for the Seeing Eye, Inc. The documentary features O&M pioneers William Debetaz, Richard Hoover, Thomas Benham and others. 2007.33.142
From Here to There: Orientation & Mobility, ca. 1962, was produced at the California School for the Blind by Phil Hatlen. It featured instructors Pete Wurzburger, Tom Trevena, and Carolyn Chang. 2007.33.140

<u>Cane Travel</u>
{Section label:} A blind person traveling independently prior to the development of O&M was often in danger. Morrison Heady, famous for long walks in Louisville, held his staff high to help his neighbors see him coming. But a step off a curb in 1911 put Heady in the hospital with a broken hip. In England, James Biggs painted his cane white in 1921, hoping to make himself more visible. George Bonham, president of the Peoria Lions Club, promoted the idea of a white symbol cane with a red tip in 1930. Soon cities and states across the U.S. passed laws protecting blind pedestrians carrying white canes at street crossings.

In the middle of World War II, American military hospitals were filling with soldiers with serious eye injuries. Valley Forge Hospital in Pennsylvania was assigned to treat these casualties. Richard Hoover and Warren Bledsoe, instructors transferred there in 1943-44, thought that the most pressing issue was teaching the soldiers how to

get around. Experimenting with cane styles and technique, Hoover developed a training method involving a long lightweight cane used as a sweeping probe rather than as a symbol of blindness. His design came to be known as the Hoover cane and, eventually, the long cane.

After the war, Russell Williams, a blinded veteran originally trained by Hoover, was appointed to head the Veteran's Administration's new Blind Rehabilitation Center at Hines, Illinois. Hoover and Bledsoe helped Williams select the center staff and provided their initial training in the use of the long cane. Williams and his staff at Hines further developed the techniques and teaching methods that became the basis of modern O&M practice.

The success of blinded veterans convinced skeptical civilian agencies that formal training in O&M would benefit many people with visual impairments. National conferences in the 1950s to determine standards for the training of O&M instructors, and funding from the 1954 Vocational Rehabilitation Act led to the foundation of the first graduate training programs, at Boston College in 1960 and Western Michigan University in 1961. Graduates of these programs and others established orientation and mobility as a routine part of every blind student's education and each blind adult's rehabilitation.

Concept: Basic cane technique involves a rhythmic movement of the cane in an arc. Each sweep assures a safe space for the next footstep.

Concept: The Debate Over Standards—The first O&M instructors were required to be fully sighted. Challenges to this idea from the blind community over the last forty years led to new standards and alternate teaching strategies, allowing visually impaired instructors to obtain their O&M certification.

Concept: Landmarks and Shorelines—Travelers orient themselves by studying the landmarks on their path, known objects, sounds, temperature changes, or smells. Changes in the shoreline—edges where two surfaces meet-- are information points that help a traveler maintain orientation.

QUOTE: *"As I was taught by Dick Hoover and his men to travel farther and farther on my own behind my cane… I found my hopeless hope for eyesight recovery gradually dissipating. Dick Hoover lit a candle in a crisis rather than curse the darkness."* Russell C. Williams.

IMAGE: Dr. Richard Hoover (1915-1986) with young student. Hoover was a former teacher at the Maryland School for the Blind who joined the staff at Valley Forge Army General Hospital during

World War II. Hoover is regarded as the “Father of the Long Cane” for his pioneering efforts to develop an effective method to train veterans with severe eye injuries to travel independently. After the war, Hoover became an influential ophthalmologist. AER Warren Bledsoe O&M Archives, 2007.33.1.244

IMAGE: C. Warren Bledsoe(1912-2005) at typewriter, ca. 1943. Bledsoe grew up at the Maryland School for the Blind, where his father John was the superintendent. Transferred to Valley Forge in 1944, he helped Richard Hoover develop the long cane method. After the war, he coordinated blindness programs within the Veteran’s Administration, and supervised the creation of the Blind Rehabilitation Center at Hines V.A. Hospital in Illinois, where Hoover’s techniques were advanced by Russell Williams. AER Warren Bledsoe O&M Archives, 2007.33.1.257

IMAGE: Naron Ferguson, left, the first trainee at the Hines Blind Rehabilitation Center, with **Russell Williams** (1918-2001), the center's chief, 1948. Williams lost his sight in France in 1944, learned cane travel from Hoover at Valley Forge, and was picked by Bledsoe to head the Hines Center in 1947. His example in mobility was a model for newly blinded soldiers to emulate and was largely responsible for the success the fledgling orientors had with the early Hines veterans. AER Warren Bledsoe O&M Archives, 2007.33.1.248

IMAGE: Staff at Hines VA Hospital, 1948. First row, L to R, Alvin S. Chiles, Russell C. Williams, Dr. Louis B. Newman, Edward P. Mees, and Joe Romanko. Back row, L to R, Edward “Bud” Thuis, Loretta Goergen, Alford “Dee” Corbett, and Stanley Suterko. Williams and his staff refined Hoover’s techniques, and many became influential O&M instructors across the U.S. . AER Warren Bledsoe O&M Archives, 2007.33.1.246

Cane Case
AER Bledsoe O&M Archives Cane Collection
Canes used by people with vision loss come in different types, sizes, weights, colors, and materials. This case includes a variety of experimental and historic designs.

Rigid Canes:
A) **White Cane Safety Canes**, ca. 1940, were symbols rather than mobility tools. Although widely distributed prior to WWII, cane travel pioneers like Richard Hoover found them too short, heavy, and cumbersome for modern techniques. 2007.33.35
B) **Typhlocane**, ca. 1950. Russell Williams issued specifications for the long cane which were closely followed in this design by the

Precision Grinding Company in Baltimore: small crook, aluminum body with no taper, rubber putter handle, white and red reflective “Scotchlite” coating, and a pencil style nylon tip. This example was Williams’ personal cane. 2005.55.4
C) Rod Kossick and Mark Mahnke at the Northwest Regional Rehabilitation Center for the Blind, in Seattle, developed their **Mark-Rod Cane** in 1969 from fiberglass fishing pole blanks. 2007.33.42
D) The **Iowa Cane** was marketed by the Iowa Department for the Blind, ca. 1972. The green handle was a trademarked design element. It was based upon the SITE cane, and became the inspiration for the NFB fiberglass cane of almost identical design. 2007.33.37
E) This fiberglass **National Federation for the Blind Cane** was manufactured for NFB in Baltimore by Blind Industries and Services of Maryland. The steel glide tip was a standard feature on NFB canes from the beginning. 2007.33.59
F) The Rainshine Umbrella Company in Topeka, Kansas introduced the **SITE Fiberglass Long Cane** in 1960, a modification of their standard umbrella handle. 2007.33.27
G) The **American Foundation for the Blind** marketed this basic design in the 1970s. 2007.33.56
H) The **Equipoise Cane** was made by Macam Devices in Somerset, CA, ca. 1973. Its weighted crook was designed to balance the cane's shaft and make it feel lighter in the hand. 2007.33.31
I) The **"Bundu Basher" White Cane Tip** was invented in South Africa by O&M specialists Beverly Atkinson and Andre Neimandt, ca. 1988, for navigating the uneven ground of the bush country ("bundu" in Afrikaans). 2007.33.49
Folding Canes
J) The **Rigid-Fold Cane**, 1969 was made in Ogden, Utah. Its white nylon wrist loop served as a tensioning mechanism as it was pulled. 2007.33.50
K) The **Cable Cane** was patented in 1972 by Hycor in Woburn, Massachusetts. Its unique folding handle locked a steel cable that tensioned the cane. 2007.33.54
L) The **Autofold Cane** was another interesting 1972 design from Hycor. The flared openings on its segments were supposed to automatically open and lock into place with a shake of the handle. 2007.33.55
M) This **Aluminaid Heavy Folding Cane**, ca. 1985, manufactured by New York sporting goods company Mah-zell, featured a screw-on marshmallow tip. 2007.33.28
N) The **W.C.I.B. Folding Cane**, ca. 1990, was manufactured by White Cane Instruments for the Blind in Aurora, Missouri. This example has a friction fit, slip-on white nylon pencil tip. 2007.33.39
O) The **Ambutech Folding Identity Cane**, ca. 1990, came from Winnipeg, Canada. An identity cane symbolizes the fact that the user

has a visual impairment. In general, they are lighter and smaller, and not sturdy enough for use for general mobility. 2007.33.48
Telescoping Canes
P) The red, white and blue **Americane** was made in Missouri, ca. 1990. It had a unique friction locking system that some found unreliable. 2007.33.26
Q) The **Mahler Telescoping Cane** was marketed by the American Foundation for the Blind as a “Ladies Pocket Cane,” in their 1973 catalog. 2007.22.58

O: (front corner) Cane Do!
Long canes feature different materials, handles, grips, and tips. Their length is matched to the height of their user. Grab a cane from the bin yourself and study its form.
Materials determine a cane’s weight, flexibility, and ability to transmit information. Aluminum is common, but many other materials have also been tried.

Handles come straight or with a crook. The crook was used to guard the hand from collision and prevents a dropped cane from rolling away.
The **grip** affects the user’s cane control-- especially in bad weather-- and the transmission of tactile information and vibrations.
The **color** of a cane is usually white with a red tip, to comply with white cane safety laws. The color sometimes comes from a light-reflecting tape.
The **cane tip** is a matter of personal choice. The first long canes had a thin, wooden “pencil” tip, and a nylon version is still popular. The steel disk “glide tip” was introduced in the 1960s. Ball, mushroom and newer tips, designed to be durable and less likely to catch in cracks, were based on the experiences of mobility specialists and users.
Key to canes in the bin
A) Cane travel pioneers like Richard Hoover found **Wooden White Cane Safety Canes** too short, heavy, and cumbersome for modern techniques. They are not true long canes.
B) This **standard aluminum cane with crook** is a modern version of the long cane introduced by Richard Hoover.
C) **Rigid aluminum cane, straight handle.**
D) **Graphite folding cane**. Some users like folding canes, because they are easy to store when not in use.
E) **50/50 carbon fiber folding cane**. The National Federation of the Blind has long advocated the use of rigid long canes over folding canes. This variety sold by NFB is a compromise, folding in half for storage.

Electronic Travel Aids

In 1944, the U.S. Office of Scientific Research and Development formed a group to study applications of military science to the needs of blinded veterans. One of the Committee on Sensory Devices' primary goals was obstacle detection. Over the next thirty years, the Veteran's Administration and other federal agencies invested millions of dollars toward this goal.

In principal, most of these electronic travel aids (ETAs) worked alike. Energy--light or sound waves--was broadcast by the unit, and detected again as it bounced off objects in front of the user. Information was transmitted to the user by audio tones or by vibrating pins in the device handle. ETAs fell into two basic types: "go/no go information" and "maximum environmental information". The first ETA to be tested, the Signal Corps Sensory Device developed by physicist Lawrence Cranberg in 1943, detected obstacles in the user's path and advised the user to go or not go. The second category included a range of ETAs developed by British researcher Leslie Kay. His 1966 SonicGuide delivered a complicated abundance of environmental information, including distance estimation, directional information, and even object identification information that could be understood with considerable practice.

Although ETAs allow a user to monitor the world ahead at ranges greater than those detected by canes, to date they have not progressed to widespread use. First, they are expensive. Second, many consumers found output from the environmental devices more than they needed. Third, the go/no go ETAs occupied a free hand they preferred remain free. GPS technology, however, has spawned a range of new handheld devices that quickly identify street intersections and other landmarks. The promise of future advances—including devices with artificial intelligence or even artificial vision--remains a possibility.

IMAGE: Young man experimenting with a sonic guide as a secondary travel aid to his dog guide
AER Warren Bledsoe O&M Archives

{ETA Case}

AER Bledsoe O&M Archives ETA Collection
The Bledsoe Archives contains the finest collection of early prototype and production electronic travel aids in the United States.
Side of case

Signal Corps Sensory Device Prototype, ca. 1947. Lawrence Cranberg invented this unit at the U.S. Army Signal Corp Engineering Lab. Cranberg's device sent out a beam of light, which when reflected off an object, was detected by the machine. 2007.33.5
Signal Corps Sensory Device, 1950. Twenty-five models of Cranberg's design were manufactured by RCA. Thomas A. Benham, an engineer who was blind, was contracted by the Veterans Administration to field test them at Haverford College. 2007.33.4
G-5 Obstacle Detector. In 1953, Benham began working with Malvern Benjamin at Biophysical Instruments, Inc. to advance the Cranberg design. The G-5 was one of three prototypes they produced for the Veteran's Administration. 2007.33.8

Top Row
Flashlight Detector, ca. 1955. This was the third prototype developed by Thomas Benham and Malvern Benjamin. It featured an early gallium arsenide light-emitting diode that proved useful to Benjamin during his work on the laser cane, with its true room temperature lasers. 2007.33.9
Stromberg-Carlson Pulsed Frequency Modulation Device. Haskins Laboratories, a firm associated with Harvard and MIT, was also contracted by the U.S. government to develop technologies for assisting blinded soldiers. This model was invented by electronics giant Stromberg-Carlson in 1947, one of four different experimental devices based on the basic principles of radar/sonar. 2007.33.19

Second Row
Kay Sonic Torch, ca. 1962. Dr. Leslie Kay developed sonar technology to find submerged objects for the British Navy in the 1950s. He later developed an interest in using sonar's principles to create electronic travel aids for the blind. Lightweight and portable, his Torch scanned the area where it was pointed and provided auditory feedback to the user. 2007.33.10
Kay Sonicguide, ca. 1975. Also conceived in England by Leslie Kay, the Sonicguide was not fully functional until 1966. By locating the sensors in eyeglasses, Kay hoped to avoid a principle disadvantage of all ETAs: they occupied a free hand of the user. The Sonicguide communicated an abundance of environmental information but was difficult to master. It was the subject of several courses for O&M trainers throughout the 1970s and early 1980s. 2007.33.13
"K" Sonar, 2005. The "K" Sonar was Leslie Kay's most recent attempt to develop an easy to use ETA. Introduced in the APH catalog in 2005, it was designed to attach to a standard cane, but functioned much like the Sonicguide in a smaller package. 2009.14

Third Row

Mowatt Sensor, ca. 1978. Invented by New Zealander Geoff Mowat, the Mowat Sensor was developed commercially by Wormald International Sensory Aids Ltd (a forerunner of Humanware). The device emitted a beam of ultrasonic sound and detected its reflection from objects and obstacles. It vibrated when it detected objects; the rate of vibration suggesting the range of the obstacle from the user. 2007.33.15

Nottingham Obstacle Detector, ca. 1973. The Nottingham was developed at the University of Nottingham in the early 1970s and still on the market as late as 1997. Similar to the Mowat Sensor, it emitted pulses of ultrasonic sound and used reflected sound to detect obstacles. The NOD sounded eight musical notes, each note corresponding to a 1' increment of distance, going down the scale as the object was approached. 2007.33.17

E-Model Pathsounder, 1974. The Pathsounder was invented by Lindsay Russell while working at MIT. The first model was field tested in 1968-69. By 1974, the E model was being made for distribution at the three VA Blind Rehabilitation Centers. Worn around the neck, it was designed to compliment the use of the long cane. Emitting a sound(buzzing or beeping), or a vibration (at the chest or neck), or both, it alerted the user to objects within the field of view above and below the waist, in the direct travel path, within a distance of 6-8'. 2007.33.3

Right side of case

C4 Laser Cane, 1971. The laser cane evolved in a direct line from Lawrence Cranberg's Signal Corp Sensory Aid to the flashlight detector of J. Malvern Benjamin. By 1966, Benjamin and his colleagues at Bionic Instruments, Inc., took advantage of miniaturized components to invent the first true laser cane. This model was developed later that year. Three beams of light encountered obstacles ahead and above the user, and drop-offs below. The light was reflected and detected by the cane's receivers. Audio signals of different tone sounded when different detectors were activated. A vibrating pin in the handle was activated only by the forward channel detecting an obstacle. 2007.33.40

RR O: Try it!

This small device is a modern ETA, the Miniguide US. Although the range is adjustable, this one is set to detect nearby objects. Push the front button to turn it on. Put your hand in front of the miniguide and see how fast it vibrates. Move your hand farther away, and the vibration rate becomes slower. When you feel no vibration, an object is out of range. A miniguide is a secondary travel device. It would not be used without a cane, dog guide, or sighted guide.

Orientation Aids

O&M teachers use a variety of tools to introduce spatial concepts and help a person with vision loss create mental pictures of a new environment. The
Chang Tactile Diagramming Kit was introduced at APH in 1971. Use the sample pieces to create a diagram of a room in your home. Maps are one way to introduce complicated route information and intersection features. Students must learn to scan a map and identify its symbols before it can have any meaning. This diagram of the **Arlington Cemetery Vicinity** in Washington D.C. combines both visual and tactile information.

RR: Scrapbook of pictures from Bledsoe Archives

KENTUCKY INSTITUTION FOR THE EDUCATION OF THE BLIND

THE EARLY YEARS
Bryce Patten came to Louisville in 1839 and established a private school for boys. Three members of his family were blind, and his brother, Otis, was a student at the Perkins Institution. Bryce Patten was very interested in educating blind children when he began classes for a small group in 1839.

Probably the first reference to a school for the blind in Kentucky is in a letter* of January 25, 1840 from Bryce Patten to Samuel Gridley Howe. Patten described how he assembled five blind children and, with the help of his sister, began to teach them for a few hours each day.

Bryce Patten convinced his brother Otis to teach in Louisville, and Otis arrived on the “new steamer” Montezuma on October 12, 1840. He taught the sighted children in the mornings and the blind children in his room in the afternoon. In early 1841 Otis Patten gave an exhibition of the blind children’s skills (the first such exhibition in Kentucky) before the General Assembly.

Otis Patten’s exhibition failed to convince the legislature to appropriate funding for a school. Dr. Howe offered to help his former pupil. He, his students, and Mr. Chapin of the Ohio Institution came to Kentucky to give student exhibitions for the lawmakers and the public.

DR. HOWE VISITS KENTUCKY
Dr. Samuel Gridley Howe made many tours of exhibition with his students to convince state legislatures to provide for the education of

the blind. A later director at Perkins, Edward Allen, commented on Howe's presentations:

"provision for the education of the blind was made in those states before the representatives of the people had time to wipe the tears from their eyes."

1842—THE KENTUCKY SCHOOL IS CHARTERED
The campaign was successful and on February 5, 1842, the Kentucky Institution for the Blind was chartered with an appropriation of $10,000 which was made on the condition that the people of Louisville would raise the funds to get the school started.

THE SCHOOL BEGINS WITH FIVE STUDENTS IN A RENTED HOUSE
The money was raised quickly, a house was rented, and the original five students began classes in May 1842. By 1845, the school had 24 pupils and had opened a store near Main Street to sell the articles made by the students.

The school moved into its first permanent home on Broadway in 1845. Six years later it was destroyed by fire. That same year (1851), the board purchased ten acres on the eastern limits of the city for $500 and made plans for a new school building.

RR IMAGE: Kentucky Institute for the Blind

ON THE FRANKFORT TURNPIKE ROAD
The new school, a beautiful, domed, classical revival building was designed by a Louisville architect, E. E. Williams. It was completed in 1855.

The December 3, 1852 entry in the Kentucky Institution's account books reports that E. E. Williams was paid $50 for "drawing plans and elevation for the Kentucky Blind Institute," and an extra $15 for "writing descriptions and making estimates for same."

"…The site is the highest, most commanding, most beautiful in the vicinity of Louisville… The Ohio River winds beautifully in view for several miles, until it seems at last to lose itself among the blue hills of Indiana. The edifice is in full view of the travel on the Ohio River, the Frankfort railroad, the Shelbyville and Bardstown roads, and several other great avenues leading into the interior of Kentucky. "
-Annual Report, Kentucky Institution for the Education of the Blind, 1852-53

THE CIVIL WAR

“Situated in the very centre of a distracted country, and in a state which has been the theatre of war, it was not to be expected that the institution would wholly avoid loss, if it escaped annihilation.”
-Bryce Patten, 1862-63 report, Kentucky Institution for the Blind

When Louisville was threatened by the rebel forces under General Bragg, Federal troops occupied the land and the buildings of the Kentucky Institution for the Blind, forcing the teachers and students to leave for a short period.

Bryce Patten resigned as superintendent in 1871 and was succeeded by Benjamin B. Huntoon, who continued and improved upon Patten’s projects. Huntoon was one of the country’s leading educators of the blind, and a prominent member of the Louisville community.

RR IMAGE: Benjamin Bussy Huntoon (1836-1919)
Huntoon is joined in this photograph by two children, probably his grandchildren.
Photo courtesy Patricia VonSchlegalt

RR IMAGE: Josephine Huntoon (1836-1919)
Mrs. Huntoon served as matron of the school, taking care of the daily operations, and, no doubt, doing other duties as assigned.
Photo courtesy Patricia VonSchlegalt

Judge William Bullock, who took the lead in establishing the Kentucky School, offered a resolution in the legislature to provide for the establishment of a department for the “colored blind” as a part of the school. The resolution was approved in 1884 and $20,000 was appropriated to buy land and erect a suitable building. In October 1884, the school was formally opened.

RR IMAGE: Judge William Fontaine Bullock (1807-1889)
Bullock was an advocate of public education and his efforts in the legislature resulted in the establishment of the common school system, the school for the blind in 1842, and the colored department of the school for the blind in 1884. He was an original trustee of the Kentucky School for the Blind and the Printing House and served as president of both organizations.

IMAGE: The 1852 Louisville Daily Journal carried this article:

“SCHOOL FOR THE BLIND—His Excellency, Governor Powell, approved yesterday the plan of E. Williams, the architect for the Kentucky Institute for the Education of the Blind. The plan had

previously received the unanimous sanction of the commissioners, and of the trustees of the school.

The lot of ten acres, purchased for the school, is one of the most beautiful and healthy sites in Kentucky. It is immediately beyond the residence of William H. Pope, Esq., on the Shelbyville road."

Caufield and Shook Collection, Photographic Archives, University of Louisville

IMAGE: Bryce M. Patten (1814-1891)
Patten was the founder and first superintendent of the Kentucky Institution for the Education of the Blind. During his twenty-nine year tenure, he saw his first school building go up in flames; moved his school to the suburbs and built a beautiful building; saw this building occupied during the Civil War; supervised a fledgling printing house, made tactile maps and globes; traveled in the state in search of students; and took his students on an annual trip to Frankfort to appear before the legislature.
Photo courtesy the Filson Club

IMAGE: Students and Teachers pose on the front steps with Santa
Caufield and Shook Collection, Photographic Archives, University of Louisville

IMAGE: Classroom, 1902

IMAGE: The Kentucky Institution for the Education of the Blind was featured in the
June 19, 1880 issue of *Frank Leslie's Illustrated Newspaper*.

IMAGE: Main Dining Room, Kentucky Institution for the Education of the Blind
ca. 1903
photo courtesy of University of Louisville Photographic Archives

IMAGE: Susan Buckingham Merwin (1874-1922)
Susan Merwin was the second woman to head a U.S. school for the blind, serving as superintendent of the Kentucky school from 1912 until her death in 1922. She was born and raised in Louisville and came to the Kentucky Institute as a teacher in 1895. Her work with blind children was recognized both locally and nationally.

The Colored Department

2 other pictures near right side, near "Colored Department" picture

Morrison Heady

RR IMAGE: Reproduction of a letter from Morrison Heady to Samuel Gridley Howe
In addition to showing Heady's handwriting, this letter's postscript (below) illustrates his creativity in inventing tools to make life better for himself and other blind people.

"P.S. I have just invented a guide by which I now write this letter… it is very simple in its construction and I think would serve all the blind who can write a good purpose."

Blind Bard of Kentucky
Poet, novelist, musician, teacher, and inventor, James Morrison Heady was born in 1829 near Taylorsville, Kentucky. He lost the sight of one eye in an accident at age six. Ten years later, another accident caused total blindness. He attended the Kentucky School for the Blind and later the Ohio School for the Blind.

One of the nation's first solicitors and advocates for books for blind people, Morrison Heady traveled the country in the 1850s raising funds for this purpose and later was an agent of the American Printing House for the Blind.

He was a gifted musician and taught piano until at age 40, he became deaf. Heady's first book, *The Farmer Boy,* published in 1863, was the story of George Washington's youth. It It was published in raised letters by APH in 1874. Later, he wrote an historical novel and several books of poetry. His poems appeared in the *Louisville Journal,* where he was known as the "Blind Bard of Kentucky."

His later years were spent in Louisville, where the city's most prominent citizens were his friends and he was a well known figure.

At his death in 1915, he was eulogized by Rabbi Joseph Rauch, who said, "Mr. Heady was a man with the vision of a seer, the spirit of a philosopher, and the soul of a poet."

RR IMAGE: "Where is the Spiritland" (Sheet music title)
Copyright 1851
Heady was a musician and music teacher before he became deaf. He published several pieces of music.

Quote: When his biography of George Washington was embossed by the Printing House in 1874, APH president W.F. Bullock wrote:

“…Written by a native of Kentucky, foundations of whose education were laid at the Kentucky School for the Blind, and who, though totally blind and deaf, has, in this work, left a monument that will keep his memory ever green in the hearts of the blind in this country.”
-APH 6th Annual Report, 1874

IMAGE: Heady talking with children
Morrison Heady was well known in Louisville and was a familiar figure in his neighborhood. Children were fascinated by him and loved to spell their names into his glove. He enjoyed telling stories to the children.
Photo courtesy Ken D. Thompson

IMAGE: Morrison Heady's "Talking" Glove
ca. 1900
After he became deaf, Heady devised a glove on which the letters of the alphabet were applied in a specific pattern. To "talk" with him, a friend spelled a message by touching each letter and Heady, who had memorized the positions of the letters, would repeat the words.

OIC: MORRISON HEADY’S CHESS SET
ca. 1890
Loan from the Filson Historical Society

At an 1891 meeting of instructors of blind children,
B. B. Huntoon, the Kentucky superintendent, said:

I would like to say that, as a matter of interest, Mr. Heady, who, as many of you know, is deaf…and blind, is a chess player and holds his own among some of the ablest players. He has devised a set for his own use.

OIC: BOOKS BY MORRISON HEADY

Seen and Heard, 1869

The Double Night and Other Poems, 1901

The Red Moccasins, 1901

Burl, 1884

IMAGE: His Library Model

Heady was creative and interested in everything around him. An avid supporter of the public library, he entered the competition for a new library design with this model. He was also an inventor and invented a folding bed and an automatic opening gate as well as devices for blind people.
Louisville Herald, July 31, 1916

IMAGE: Morrison Heady Letter
A mechanical typewriter enabled Morrison Heady to write letters without the aid of a scribe. This letter dated December 25, 1889 was written to his cousin. In it he talks about his books and reminisces about friends and family. His sense of humor is evident in the passage describing a school teacher "who used to give you the headache by an external application of the book you were trying to make an internal appropriation of…"

IMAGE: James Morrison Heady (1829-1915)
This portrait shows Heady as a young man, ca. 1860

IMAGE: Morrison Heady
After he became unable to walk around town, Heady exercised in the back yard of his Brook Street home. He used a cable (visible in this photograph) as a guide. He used the pedometer he invented to measure his progress.
Photo courtesy The Filson Club

Abacus

The abacus first appeared ca. 1200 A.D. in China. About 1600 A.D., the Japanese began to use and adapt the Chinese abacus which they called the *soroban* Although it was not made primarily for use by blind people, the abacus provided them with a means of calculating with greater speed and accuracy.

ABACUS CALCULATION STEP BY STEP

Beads are stationary to illustrate the correct positions.

The columns of beads from right to left represent ones, tens, hundreds, and so on. The single bead above the bar represents 5 units, the 4 beads below

the bar represent single units. Beads are in use only when set against the
center bar.

The problem represented below is
274+91 = 365.

Step 1
> Set 2 beads in the hundreds column for 200.

Step 2
Set 2 beads in the tens column plus the 5 bead from the tens column to make 270

Step 3
Set 4 beads from the ones column to make 274

Step 4
To add 91 to 274, first add in the 90. As there are not enough unused beads left in the tens column, you must add 1 bead from the hundreds column…

Step 5
…then subtract the extra 10 to make a total addition of only 90 by
> removing one bead from the tens column.

Step 6
Finally, add in the 1 by adding the 5 bead in the ones column and
subtracting the 4 single units in that column. This leaves the correct
answer of 365.

O: Follow the beads on the functional abacus and try your own calculations.

RR O: Cranmer Abacus
American Printing House for the Blind

“With the advent of the Cranmer Abacus for the Blind, we are about to witness a significant breakthrough in the mechanics of calculation for the blind…The Cranmer Abacus promises to enable blind people to calculate more quickly, more efficiently, and with less effort than a sighted person who is using pencil and paper.”

-Fred Gissoni, *The New Outlook for the Blind,* November 1963

The Cranmer Abacus was developed by Terrance V. Cranmer and was first produced by APH in 1963. The model made by Cranmer – spherical beads used as counters, and adequate bead travel allowing for easy reading, and the felt backing to hold the beads in position -

Mathematics

Until the mid-twentieth century, traditional teaching methods prevailed in the education of both sighted and blind children. Arithmetic was taught by rote.

The earliest math aids were common objects. Using pins in different positions, a blind person could calculate on a pin cushion or his or her clothing. The most convenient counting tools were ones own ten fingers, the basis for the abacus and decimal system, both of which use the power of ten.

RRI: Hoff Aid, Patent Drawing

QUOTE: "The obvious difference between the approach of a blind person to an arithmetic problem and the approach of a seeing person is that the latter can use paper and pencil so conveniently. Probably it is not realized how much the common arithmetic techniques are based in the availability of these simple implements."
-Edward J. Waterhouse, Director, Perkins Institution and Massachusetts School for the Blind, "Arithmetic Aids for the Blind," *The International Journal for Education of the Blind,* December 1955

Arithmetic (or ciphering) Slates
The first apparatus for tactile arithmetic was invented by a blind man, Nicholas Saunderson, in 1720. Soon there were variations and improvements on Saunderson's invention—pentagonal slates, octagonal slates, and the braille cube slates in use today.

These systems attempt to provide a way for blind students to set down arithmetic problems in the same pattern as they are written with pencil on paper.

Doing Arithmetic in Braille
Braille numbers are the same as the first ten letters of the braille alphabet, preceded by a number sign. Arithmetic problems may be written in braille with a slate and stylus or a braille writer.

Using the Abacus

“To blind persons, the abacus is to arithmetic as braille is to reading and writing.”
-Fred L. Gissoni, “The Abacus Explosion,” *The New Outlook,* February 1965, vol. 59, no. 2

A great many people throughout the world use the abacus to solve arithmetic problems and it is especially helpful to blind people. The modern abacus is a frame having moving beads (counters) on parallel rods. Each rod with its counters represents one place in the decimal system.

Algebra
The braille mathematical notation system, the Nemeth Code, contains a very complete set of algebraic symbols. It was developed by Abraham Nemeth, a blind instructor of mathematics at the University of Detroit.

QUOTE: “The blind pupil, more than one with sight, needs to acquire the power of solving mathematical problems mentally, and to be accustomed to carry even lengthy processes to a clear and accurate conclusion, without any external aid. “
-Proceedings of the 9th Biennial Meeting of the American Association of Instructors of the Blind, 1886

RRO: The first counting tools were a person’s ten fingers and toes. When people needed to count higher, they used small natural objects: notched or bundled sticks, knotted cords, or pebbles. The world “calculate” is derived from the Latin word “calculus,” which meant a pebble used for adding or subtracting.

Mathematics Slates

IMAGE: Girl using a mathematics slate, 1939
New York Institute for the Education of the Blind

IMAGE: Nicholas Saunderson (1682-1739) lost his sight in infancy in a bout with smallpox. Despite never attending college, he became a brilliant mathematician and gifted teacher who taught at Cambridge University in England. In 1771, he was awarded the distinguished position of Lucasian Professor of Mathematics.

IMAGE: Key to Saunderson’s Palpable Arithmetic Device
Saunderson’s device was a board divided into square pieces. Pins were positioned on the squares to indicate numbers from one to nine.

In 1720, Saunderson created the first known calculating device for blind people. He called his method of calculation “Palpable Arithmetic.” Palpable means “tangible” or “capable of being touched or felt.”

IMAGE Right: Title page to Saunderson’s algebra text published in 1740

IMAGE: Calculating instruments for the use of the blind in 1888 Ballu’s tablet (left), detail of squares and pin (right), Oury’s tablet detail of octagonal openings and pegs

OIC: Eaton Ciphering Board
George Eaton, a graduate of the Perkins School for the Blind in Massachussetts, designed his mathematics tool around 1871. The Eaton boards were used at the school through the 1880s.
Loan from Perkins School for the Blind

MATHEMATICS SLATES

IMAGE: Girl using a mathematics slate, 1939
New York Institute for the Education of the Blind

IMAGE: ***Nicholas Saunderson (1682-1739) lost his sight in infancy in a bout with smallpox. Despite never attending college, he became a brilliant mathematician and gifted teacher who taught at Cambridge University in England. In 1711 he was awarded the distinguished position of Lucasian Professor of Mathematics.***

IMAGE: Title page from Saunderson’s algebra text published in 1740

Key to Saunderson’s Palpable Arithmetic Device

Saunderson’s device was a board divided into square spaces. Pins were positioned on the squares to indicate numbers from one to nine.

In 1720, Saunderson created the first known calculating device for blind people. He called his method of calculation “Palpable Arithmetic.” Palpable means “tangible” or “capable of being touched or felt.”

Pentagonal Arithmetic Boards

IMAGE: The pentagonal slate was developed around 1829 at the Glasgow Asylum for the Blind in Scotland. The pentagonal pegs with projections on the sides and angles fit into pentagonal holes to form all ten numbers.

IMAGE: Key to setting numbers on a pentagonal board

OIC: Below
Bertha Shepard Slate
APH, ca. 1935

This is an updated version of the pentagonal slate, an arithmetic board design that endured for more than 100 years. It is all metal with pentagonal-shaped cells and type and has three compartments for holding the type.

OIC: GISSONI ABACUS COLLECTION

For blind students, the abacus was faster and more accurate than other calculating devices. APH staff member Fred Gissoni wrote an instruction book for the abacus and donated his abacus collection to the museum.

A. Japanese Soroban
Osaka-style modified with a red felt
backing by APH while researching adaptations for blind use.
1994.14.6

B. Chinese Suanpan
1994.14.4

C. Chinese Suanpan
1994.14.1

D. Japanese Soroban
Osaka-style adapted with felt backing for blind use.
1994.14.8

E. Haas Loop Soroban
ca. 1960
Designed by Victor Haas of Seattle for blind users.
Rods arc for free movement of beads.
1994.14.5

F. Japanese Soroban
ca. 1970

Japanese abacus.
1994.14.12

G. Russian Schoty
pre-1965
1994.14.3

H. Danish Abacus
ca. 1962
Designed by Valdimar Paaske, a teacher of blind students in Copenhagen.
1994.14.2

I. Japanese Soroban
17th century
1994.14.13

J. Japanese Soroban
Tokyo-style abacus designed for blind students at the Tokyo School for the Blind.
2006.7.2

K. Holy Bead Soroban prototype
1961
Dr. Tim Cranmer (1925-2001) designed this abacus using beads made for rosaries.
1994.14.9

L. APH Abacus
1962
APH produced another of Tim Cranmer's abacus designs for field testing with blind students in 1962. Use of the abacus increased math skills in the test groups by four grade levels.
1994.14.11

M. Abacus prototype
ca. 1962
1994.14.10

N. Japanese Magnetic Soroban
Made in Osaka and used at the Tokyo School for the Blind.
1994.14.7

IMAGE: Dr. Andrew F. Schott of the University of Wisconsin developed a math curriculum in 1957 to teach sighted children basic

math skills. The Numberaid was an abacus he designed for basic math calculations. In the early 1960s the curriculum was adapted for blind students, and Schott devised a tactual math device, the Calculaid, for use with the Numberaid to record calculations.

Student with Dr. Schott
Kentucky School for the Blind, 1964

IMAGE: Numberaid with attached Calculaid
The Numberaid, a specially designed abacus, could be mounted on the Calculaid. It enabled a student to perform and express all the common arithmetical operations.

OIC: Calculaid
APH, ca. 1962

The numerical recording device has rotating wheels with raised braille numbers.

OIC: Original-Odhner
Sweden, 1960s
This mechanical pin-wheel calculator was adapted with braille for blind users. The original device was invented about 1874 by Willgodt Odhner, in St. Petersburg, Russia

OIC
Up arrow or ABOVE
Taylor Slate
APH, 1930s
An update of the original 19th century device

Octagonal Slates
The Taylor Slate
The Reverend William Taylor of York, England, introduced his design for the first octagonal slate in the early 1850s. To solve a problem, the student positioned square types, different on each end, in octagonal-shaped cells. It was the first arithmetic device widely used by blind students.

IMAGE: Key to Taylor Frame

THE NEMETH BRAILLE CODE FOR MATHEMATICS AND SCIENCE NOTATION

The code provides braille equivalents for the numerous technical symbols used in math and science notation.

IMAGE: Abraham Nemeth, Ph.D.
A blind mathematician, Nemeth taught for thirty years at the University of Detroit where he created a braille code for use in his studies. In 1952, this code was accepted as the national standard braille mathematics code and named for its creator. Nemeth also invented the MathSpeak™ concept, used to express mathematical equations verbally.

The code provides braille equivalents for the numerous technical symbols used in math and science notation.

OIC:
Tack-Tiles®, are a set of movable tiles designed to help students learn the Nemeth Braille Code. The tiles are marked with braille mathematics and science symbols.
TACK-TILES® courtesy of TACK-TILES® Braille Systems

OIC Below: *Nemeth Code of Mathematics,* by Abraham Nemeth, 1956

Calculating with Braille

IMAGE: Illustration from *Braille for the Blind*, an 1867 book by Henry Robyn describing the use of braille at the Missouri School for the Blind

Braille slates, and later mechanical braille writers, could be used for arithmetic.

OIC: BRAILLE ARITHMETIC DEVICES

Right (or arrow)
Cubarithm Slate
APH, 1957
This braille slate was a modern adaptation of a mathematics device originally developed in Paris, France. Removable cubes, marked with braille numerals, are placed in columns and rows in the frame, similar to paper-and-pencil calculations.

Above (or arrow)
Vienna Arithmetic Board
ca. 1910
Loan from Perkins School for the Blind

Left (or arrow)
Hoff Aid
Patented 1946
Paul W. Hoff, a teacher of blind students, developed this pocket-sized braille slate especially for math calculations. It is an upward writing device that produces braille on the observed side of the paper.Arabic Numerals
Arabic Numerals

Above
Number Board
Loan from Perkins School for the Blind

This varnished cardboard teaching aid has raised numbers used to teach blind children the shapes of Arabic numerals.

Left
Texas Slate

This slate was used primarily to familiarize blind people with the shapes of Arabic numerals. Actual printing types are placed in the square-shaped cells.

IMAGE: Illustration of mathematics board with Arabic numerals
From *Cassell's Illustrated Family Paper*, September 1860

OIC: Mental Arithmetic

A Book of Arithmetical Examples
Embossed at APH, 1873

Since tactile arithmetic slates were slow and cumbersome to use, mental arithmetic was an important part of the mathematics education of blind students. Arithmetic books were made up of "word problems," and oral drills were a regular part of math classes.

Geometry
"The study of the higher mathematics furnishes mental discipline that is of great value to blind youth. Geometry is especially desirable, as, in addition to all the benefits derived from the study by sighted pupils, it affords to blind ones the best means of acquiring the power of forming a correct conception from a verbal description."
-Proceedings of the 9th Biennial meeting of the American Association of Instructors of the Blind, 1886

RRO: Geometry Cards
Germany
Loan from Perkins School for the Blind

GEOMETRY
-Same case as above-

OIC: Above or up arrow
Student plane geometry pin board
Loan from Perkins School for the Blind

Students could make various plane geometric figures by arranging the wood shapes and attaching them to the padded board with pins.

OIC: Left or left arrow
Dissected wood sphere
Used at Kentucky School for the Blind

This solid geometry model opens to show the sections which are joined with leather hinges. It is thought to be one of those made at Cornell University and described in the school's 1872 Annual Report.

OIC: Below or down arrow
Mitchell Wire Frames with Matched Planes and Volumes
Produced by APH 1951-1990

This set of geometric figures was designed to demonstrate outline forms, planes, and volumes commonly found in geometric problems. All the figures were made to the same scale, so the wire frames fit over planes and solids of the same shape. The planes and their corresponding volumes were painted in matching bright colors.

SCIENCE

RRO: Objects found in nature were used in classrooms to teach blind children about natural science.

RRO: Biological Relief Models
Cell division in mitosis and meiosis
American Printing House for the Blind

RRI: Lady Frances Campbell shows natural history specimens to some of the first students at the Royal Normal College, London.

Outlook for the Blind, 1913

--
Most science teachers used natural specimens for student observation. They collected and mounted minerals, animals, bones, plants, etc. for classroom use. An object that was very large or otherwise untouchable, was constructed as a model, either by the teacher or as a class project.

In his 1873 request for tangible science aids, Benjamin Bussey Huntoon of Kentucky Institute for the Blind, wrote:

"…these models would be of incalculable benefit to the schools and would give the pupil ideas of the great truths of creation that would be far more complete and real than any gotten from mere description."

Several factors must be understood about learning by touch. Fingers do not reveal perspective in two-dimensional diagrams or pictures, and fingers examine an object piecemeal so it takes longer to understand the whole.

A science teacher explained:
"We must realize that the degree of pupil comprehension… is directly proportional to the contact experience with the subject studied. The experience may be direct or indirect and vary in intensity; but it must be present! Most of the public school experience is visual; ours must be tactual and auditory."
-William T. Heisler, Science Teacher, Overbrook School for the Blind, 1948

--

IMAGE: Blind students in France studying natural history, 1879
Scientific American Supplement, October 23, 1897

IMAGE:
"Biologic Science" class, Overbrook School for the Blind, Pennsylvania, 1922
(this goes with this photo and the drawing Line…France above)

Science teachers used natural specimens and mounted animals, when available, for teaching blind students.

IMAGE: Model of the human eye, L.T.J. Auzoux Co., France, ca. 1920
Collection of Moosnick Medical and Science Museum

Transylvania University, Lexington, KY

Large-Scale Models
Since the 1800s, large-scale models have been used to teach both blind and sighted students about very small or inaccessible natural objects.

Left arrow
Blind class studying the elephant in Reptile Hall, American Museum of Natural History, 1916, photo by Julius Kirschner

Neg. No. 101042. Photo by Julius Kirschner.
Courtesy Dept. of Library Services, American Museum of Natural History

Miniature Models
The girl studied a model of the hippopotamus while the boys explored a full-size mounted specimen. Miniature models are often used to make very large objects easier to comprehend.

IMAGE: Blind children studying at the American Museum of National History, 1914
Negative no. 34337. Photo by Julius Kirschner
Courtesy Dept. of Library Services, American Museum of Natural History

Natural Philosophy was the name used for the study of nature and the physical universe before modern science. Laboratory tools and science equipment were called *philosophical apparatus*.

In the 18th century, illustrated lectures and demonstrations of physical effects were a popular form of entertainment. The devices used in these demonstrations were later adopted for science classes and used by blind and sighted students alike.

IMAGE: Studying Philosophy at Perkins School for the Blind, 1880

IMAGE: Right arrow
Dr. Fisher with class of blind children, “Solar System” talk, American Museum of Natural History, 1917

Neg. No. 36469. Photo,by Julius Kirschner.
Courtesy Dept. of Library Services, American Museum of Natural History

Model 4A Slide Rule
American Foundation for the Blind, ca. 1950

OIC Right side: For blind students, this vinylite disc design was compact and accurate in contrast to earlier models which were enlarged versions of the standard slide rule.

OIC right side: *Kine Mltply Vizr*
Are You Bright as a Bunny?
APH, ca. 1963

A braille mathematics aid for teaching multiplication

Turning the disc to align with the number to be multiplied produces the answer between the ears of the bunny.

OIC left: Troemner #10 Analytical Balance
Henry Troemner, Philadelphia
Early 20th century

This standard laboratory scale was used without modification by students at the Kentucky School for the Blind

IMAGE left wall of case: Above or up arrow
Science illustrations
Pictures for the Blind
M. Kunz, Germany, ca. 1890

These form-pressed paper botanical and zoological illustrations are from a series called *Pictures for the Blind* produced by Martin Kunz (1847-1923), director of the school for the blind in Illzach, Germany. These tactile illustrations for classroom use were purchased in great numbers by schools for the blind in Europe and the United States.

OIC: Vultures
Three-dimensional metal zoology plaque
Press of the Imperial and Royal Court and State
Vienna, Austria, 19th century
Loan from Perkins School for the Blind

This copper- plated metal plaque was one of a set used to teach blind students the shapes and textures of the animals they studied.

OIC: Science Measurements Kit

APH, ca 1970

Developed by the APH Instructional Materials Reference Center, this kit was used to illustrate and explain basic operations of measurement. Some of the items in the kit were standard products and others were adapted with tactile symbols for blind students.

HANDS-ON EXHIBITS

Basic Science Tactile Graphics: Teacher's Guide
American Printing House for the Blind, 2002

Use these TACK-TILES® to make your own math problem.

TACK-TILES®, is a set of movable tiles designed to help students learn the Nemeth Braille Code. TACK-TILES® courtesy of TACK-TILES® Braille Systems

Human Eye Model

Enlarged models may be used to show the detail of small items. This is a medical model of the human eye that may be taken apart to view its various parts. Medical models have been used for over 100 years. Can you find the picture of a historic model of the human eye in the exhibit above?

GAMES

IMAGE: Derby Winner Jigsaw Puzzle
London: Royal National Institute for the Blind
ca. 1955

A jigsaw puzzle of 1952 Epsom Derby winner, Tulyar, from a print by R. Anscomb. Puzzle pieces are made of plywood. Multiple layers are used to raise the horse and jockey above the background.

IMAGE: Illustration from *Popular Mechanics Magazine*

Objects in Case:
1
Checker Board and Men
Philadelphia: Alfred Wayne
ca. 1894
Gift from the Royer Greaves School for the Blind, Paoli, PA

The recessed spaces in the wooden checkerboard hold round and cube-shaped checkers. The hollow side of a checker is turned face up when it becomes a king. The checkers are reproductions of the original game pieces.

2
Braille Pinochle Playing Cards
Cincinnati: U.S. Playing Card Company

Each card in the deck of 48 Pinochle cards is
embossed with braille to indicate its suit and number.

3
Patience Cards
London: Royal National Institute for the Blind
ca. 1940-1970

A deck of small playing cards with brailled numbers and suits.
Patience is a game of solitaire.

4
Homonym Puzzle
manufacturer unknown

Lightweight wooden squares, with the letters C, E, N, S, and T in both print and braille, can be arranged to make three homonyms: cent, sent, and scent.
Small brass pins are used for the raised braille dots.

5
Game Die
Jericho, NY: Independent Living Aid
after 1997

Black plastic die marked with raised dots instead of numbers.
Die was included in a game kit produced by the American Printing House for the Blind.

6
Poker Chips
manufacturer unknown

Different shapes help the player to identify the value of these poker chips through touch.

7
Dominoes
manufacturer unknown

Black dominoes with raised dots are made of molded Bakelite.

8
Braille Interlocking Dominoes
Watertown: Howe Memorial Press, ca. 1933

These dominoes interlock to keep their placement secure. The tops are marked with brass dots.

9
Minature Dominoes
manufacturer unknown

Small dominoes with recessed dots are stored in a wooden box with sliding lid.

10
Dominoes for the Blind
London: London Association of the Blind
ca. 1968

The white plastic dominoes with raised black dots are designed to be easily identified through both sight and touch . Each domino is divided in half by a raised line. Textured backs prevent the dominoes from moving out of place.
Produced for and distributed by the Royal National Institute for the Blind.

11
Braille Alphabet Blocks
Grand Rapids: Uncle Goose Toys
after 1982

Shapes of letters can be felt through cut-outs in the basswood blocks. Each letter is also embossed in braille.

12

Braille Checker Game
Wilson Plastics and Dow Chemical
ca. 1970

Distributed free of charge by Lions International, this checkers set is made of molded plastic. Round and square checker shapes distinguish
opposing players. Checkers fit securely in the recessed squares of the gameboard.

MUSIC

Even though early educators at the schools for the blind knew that the long-held popular belief that somehow all blind people were gifted musicians was untrue, they strongly supported musical training for those who proved to be talented, and offered vocational opportunities, and for average students, personal satisfaction.

Musical instruction was given orally and teachers dictated the notes to be played to the students learning to play instruments. There was embossed sheet music, but it was not until music was reproduced in the dot systems of braille and New York Point that students could read and study music independently.

RRI: Braille Musical Alphabet, and examples in braille and ordinary music
Braille musical notation underwent a number of revisions culminating in the 1925 adoption of the “bar by bar” method whereby the musician could get a complete bar under his fingers in contrast to the former method of writing eight bars of the treble followed by an equal number of the bass. The representation of every symbol of printed music in braille was also accomplished.

RRI: Hymnals in Braille article

QUOTE: “As music is practically the only fine art which the blind can study successfully, it is emphasized far more in schools for the blind than elsewhere… It is doubtless true that the ears of the blind are developed to a greater keenness than those of the sighted, but this does not necessarily imply a keenness or ear for music.”
-Marie Frampton, *Education of the Blind,* 1940

Piano Tuning

Piano tuning was one of the earliest vocational subjects taught in schools for the blind. It was a good occupation for a blind person who had a good ear, technical skill, some knowledge of music, and piano playing ability.

It is a popular misconception that people who are blind have a natural ear for pitch; actually, their need for musical training is the same as that of sighted people.

IMAGE: Pianoforte Tuning at the Royal Normal College, London, 1913

IMAGE: Professional blind musicians worked as performers and teachers.

IMAGE: Orchestra, Connecticut Institute and Industrial Home for the Blind, 1895

IMAGE: Blind Trio, Pleasant Home, OR

IMAGE: Blind Trio postcard, 1910

IMAGE: The Hostetler family, Uniontown, PA, ca. 1870

IMAGE: Organist, Bonham, TX, ca. 1870

IMAGE: Unidentified violinist

IMAGE: left arrow
Girl at Piano
New York Institute for the Education of the Blind
1939
The girl is reading tactile music with one hand and playing the notes with the other. Blind music students read and memorize music a few measures at a time--playing with each hand separately, then together. Facts About the Education of Blind Children*, New York Institute for the Education of the Blind, 1939*

IMAGE: Students at schools for the blind could choose from among a variety of music classes. In 1900 the Indiana School for the Blind offered music classes in horn, harmony, music history, piano, voice, organ, and choir. Students demonstrating promise received individual instruction.

IMAGE: *Morningsong in the Blind Home* from a painting by Laura Muntz Lyall (1860-1930), ca. 1897

IMAGE: "Little Emma" and teacher, New York School for the Blind, ca. 1910

IMAGE: Orchestra, Home for Blind Children, Brooklyn, ca. 1920

IMAGE: Orchestra of school for blind children, Prague

IMAGE: Orchestra, Connecticut School for the Blind, 1903

IMAGE: Marguerite Branen, New Mexico Institute for the Blind, 1923

IMAGE: Antonio Menton, Connecticut School for the Blind, 1903

IMAGE: A newspaper photo of the APH booth at the Kentucky State Fair shows APH employee Lorena Oliver demonstrating the Beetz Notation-Graph,
ca. 1950.

The Beetz Notation-Graph

IMAGE Charles J. Beetz (1886-1970) was a pianist, teacher, composer, and director of the Lighthouse Music School in New York City. He lost his sight at the age of 8 and attended the New York Institute for the Education of the Blind and later the National Conservatory of Music in New York City. In 1959 Beetz was awarded an honorary doctorate in music from Seton Hall College.

OIC: Beetz Notation-Graph
Invented in 1932 by Charles J. Beetz, the Notation-Graph was designed to familiarize blind music students with the system of notation used by sighted people and enable blind music teachers to instruct sighted pupils.

Beetz donated the production rights to the American Printing House for the Blind. APH introduced *The Notation-Graph* in 1934 priced at $10. Taken out of production after ten years, the product was updated and offered again in 1956.

The Notation-Graph is a model of the Grand Staff, mounted on corkboard. Music symbols—notes, rests, sharps, flats, etc.—were made of metal with sharp pin backs for positioning them on the staff.

OIC: Music symbols used with the Beetz Notation-Graph

IMAGE: The Blind Boys of Alabama

This gospel music group originated in 1937 at the Alabama School for Negro Deaf -Mutes and Blind. Some of the school's choir members formed a glee club, and five singers from that group formed the Hackerland Jubilee Singers, later the Blind Boys of Alabama.

Their awards include the Grammy Award for Best Traditional Soul Gospel Album for four consecutive years (2001-2004) and the American Federation of Television and Radio Artists (AFTRA) 2004 Disability Awareness Award. The group was inducted into the Gospel Music Hall of Fame in 2002.

OIC: A Pocket Manual of Signs Employed in Music
N. B. Kneass, Jr.
Philadelphia
1877

OIC: *A System for Writing and Printing Music*
William B. Wait
American Printing House for the Blind
1874

In 1874, APH published the system of Music Notation by W. B. Wait, Superintendent at the New York Institute for the Blind. It required casting a special type for successful printing.

"But the enthusiasm with which it has been mastered by blind musicians—who can, by its methods, write and read their own music quicker and faster than any other system—shows that it is an invaluable publication."
-1874 Annual Report

First Schools for the Blind

1831
NEW YORK INSTITUTION FOR THE BLIND, New York City

Now, New York Institute for Special Education, The Bronx

The New York Institution for the Blind was incorporated in 1831 and opened in March 1832.

IMAGE: Dr. John Dennison Russ, Principal 1832-1834

Concerned for those who lost their sight to the widespread eye diseases in the city, Dr. Russ volunteered his services as teacher and first principal of the newly organized New York Institution. To raise funds for the school, Dr. Russ educated three blind boys from the almshouse and presented their accomplishments in public exhibitions. The presentations proved the value of educating blind children. By 1837, more than sixty students were enrolled and the first permanent building was begun.

IMAGE: William Bell Wait (1839-1916)
Portrait by W. T. Smedley
Wait served as principal from 1863 to 1905. He was a pioneering educator who advocated scholastic education over vocational training. He was very near-sighted and was keenly interested in working out problems faced by blind people. To make tactile reading more efficient, Wait designed a system of tactile printing called New York Point, which was widely used for a number of years.

IMAGE: Fanny Crosby (1820-1915)
Perhaps the most noted graduate of the New York Institution, Frances Jane "Fanny" Crosby was a famous writer of hymn lyrics. She wrote over 9,000 hymns including such favorites as "Blessed Assurance." Fanny Crosby also wrote and published poetry.
Image courtesy of Christian Heritage Museum

IMAGE Right: New York Institution for the Blind
The first permanent building was begun in 1837 and completed in 1842.
Engraving by W. Wade, engraved by J.C. McRae, ca. 1855

IMAGE Above: Geography Class, 1907
IMAGE Left: Kindergarten Class, 1907
1907 Annual Report

The New School

IMAGE: In 1870, extensive additions and improvements were made on the old building; most notable was the addition of the Mansard roof and towers. The city continued to grow up around the site (see photos to the right) and the school was moved to The Bronx in 1923.
1872 Annual Report

IMAGE: Paul Tuckerman, President of the Board of Managers, and J. Lawrence Aspinwall, Chairman of the Building Committee, prepare to lay the cornerstone of the new building, June 12, 1923.

1923 Annual Report

IMAGE: Breaking ground for the new buildings, April 5, 1923
1925 Year-Book

IMAGE: New York Institute for the Education of the Blind
The noted architectural firm of McKim, Mead & White designed the 1932 buildings on Pelham Parkway, The Bronx.
1925 Year-Book

IMAGE: Aerial photo of the Bronx campus
Photo courtesy of New York Institute for Special Education

IMAGE: New York Institution for the Education of the Blind
This 1923 composite shows how the city had grown up around the 1837 building. It was printed in a booklet commemorating the laying of the cornerstone of the new building.

1829
NEW ENGLAND ASYLUM FOR THE BLIND, Boston
Now, Perkins School for the Blind, Watertown

The New England Asylum for the Blind was established in Boston in 1829 and opened, with six students, in July 1832. In 1839 the institution was renamed the Perkins Institution and Massachusetts Asylum for the Blind to honor Thomas Handasyd Perkins who gave his house and grounds to the school.

IMAGE: Built in 1838 as a hotel, this South Boston building was the home of Perkins School from 1839 to 1912.

IMAGE: Thomas Handasyd Perkins (1764-1854)
The New England Asylum for the Blind was renamed to honor Perkins in 1839.
Image courtesy of StanKlos.com

Three Images: In 1912, the Perkins school moved to a picturesque new campus on the banks of the Charles River at Watertown. Architect R. Clipston Sturgis designed the Tudor Gothic buildings.

IMAGE: Samuel Gridley Howe (1801-1876)
An educator and philanthropist, Howe was the leading U.S. pioneer in the education of blind children. Howe was selected as the first director of the Massachusetts Asylum for the Blind in 1832 and served in this position for 44 years. He developed the training methods used

at the school which served as a model for schools throughout the country. Howe traveled with his students who gave demonstrations of their abilities. The demonstrations generated wide support for the education of blind children and for the Perkins school.

“He touched the eyelids of the blind,
And lo! the veil withdrawn,
As o'er the midnight of the mind
He led the light of dawn.”
*Stanza from **A Memorial Tribute**, a poem by Oliver Wendell Holmes. It was read by the poet at Howe's memorial service, February 8, 1876.*

Image: Michael Anagnos (1837 - 1906)
The successor and son-in-law of Samuel Gridley Howe, Michael Anagnos came to Perkins in 1867 as Howe's assistant. He became director after Howe's death in 1876. Anagnos established the nation’s first kindergarten for blind children in 1887.

IMAGE: The first kindergarten for blind children in the U.S. was established in 1887. Located in the Boston community of Jamaica Plain, the school building was designed by Perkins alumnus Dennis Reardon.
1896 Annual Report

IMAGE: Dennis Reardon (1845-1916)
Courtesy Perkins Institute for the Blind

IMAGE: Boys’ class at the Kindergarten for the Blind.
Photo courtesy American Foundation for the Blind

Right side
EDUCATION OF DEAFBLIND CHILDREN
IMAGE of Howe with Bridgman on lap: Samuel Gridley Howe is best known for his pioneering work in educating children who were both deaf and blind. His first student was Laura Bridgman, the first deafblind person to learn the use of language.

IMAGE of Laura and letter: Laura Bridgman (1829-1889) was Dr. Howe’s first deafblind student. She became the ‘star’ of regular public exhibitions presented to demonstrate the value of educating blind children and to raise money for the school. Hundreds of visitors came to see her skills, one of which was her ability to thread a needle with her tongue. Laura Bridgman lived and worked at Perkins until her death.

IMAGE:
Hands forming the letter “C”
Deafblind people communicate using finger-spelling (Deafblind Manual Alphabet). There is a sign or place on the hand for each letter of the alphabet.
Facts About the Education of Blind Children, *New York Institute for the Education of the Blind, 1939.*

IMAGE: Sophia Carter
One of Dr. Howe’s first students
This portrait of Sophia at age six was painted by a Boston artist as a contribution to an 1833 fair which was held to raise funds for the institution. In a letter on the occasion of the 50th anniversary of Perkins, Sophia wrote that if as much work were done in the next half-century as in the last, “blindness will almost cease to be a calamity.”
Photo courtesy Perkins Institute for the Blind

IMAGE: Laura Bridgman and Oliver Caswell
Laura Bridgman was the first deaf-blind child educated by Dr. Howe. Oliver Caswell was a later deaf-blind student.
Photo courtesy of Perkins Institute for the Blind

IMAGE: Helen Keller (1880-1968) became an even more famous deafblind student than Laura Bridgman. She studied at Perkins for four years before going on to a finishing school and college.
1891 Annual Report

IMAGE: Willie Robin (center) was a deafblind student at Perkins. Her friend is “talking” to Willie using finger -spelling.
1896 Annual Report

Perkins’ annual reports educated the public and promoted the school’s deafblind program with portraits, personal stories, and the educational progress of its deafblind students.

IMAGES: Left to Right
Thomas Stringer
The Mentor, *June, 1894*
Homer Burnham Wardwell
1896 Annual Report
Willie Elizabeth Robin
1896 Annual Report
Edith M. Thomas

1889 Annual Report

1832: Pennsylvania Institute for the Instruction of the Blind
Now Overbrook School for the Blind, Philadelphia

In 1898 the Pennsylvania Institution for the Instruction of the Blind built a new building in the rural area near Overbrook Farms. The twenty-six acre site was laid out with playgrounds, athletic field, an orchard, and grove. This educational environment became a model for other schools.

The Philadelphia architectural firm of Cope and Stewardson designed the Spanish Renaissance complex. These buildings are considered among the most exceptional examples of this architectural style on the east coast.

The Pennsylvania Institution was renamed the Overbrook School for the Blind in 1946.

IMAGE: Julius R. Friedlander (1803 - 1839) was the founder of the Pennsylvania Institution. He had been a teacher of blind children in Germany and immigrated to the U.S. in 1832 with a goal of establishing a school for the blind. Philadelphia civic leaders had proposed such a school and were looking for a European-trained teacher to lead it. They welcomed Friedlander and made him the first principal. He traveled the east coast to raise money and recruit pupils, increasing the school's student body from two students in 1832 to fifty-nine students at his death in 1839.

IMAGE: Classroom in the 1835 building
1895 Annual Report

IMAGE: 1892 Photograph of the 1835 building
1901 Annual Report

IMAGE Left: The 1835 Building
The first building for the Pennsylvania Institution was built in 1835 and could accommodate up to 100 boarding students. The annual report stated that, although the building was costly, " ...it has been erected with the most scrupulous attention to economy; and nothing has been spent upon architectural ornaments."

IMAGE to go with 1835 Building

William Chapin (1802-1888) was principal of the Pennsylvania Institution from 1849 to 1885. Trained as an artist, he made the etching of the school pictured on the right.

IMAGE on left side: The 1898 Spanish Renaissance style building, with rooms arranged around cloistered gardens, was an advanced design for a school building. The first floor contained most of the public rooms, while the second floor had dormitories for the students and bedrooms for the teachers. The servants' rooms were above the kitchen.
1887 Annual Report

IMAGES Clockwise beginning at 11 O'Clock

Playing school, 1904
View in girls' dining room, 1902
Second, third and fourth grade girls in classrooms, 1901
The kindergarten, 1901
The mutual improvement society, 1902
Competitive games in the gymnasium, 1901

IMAGE: Boys' south and west cloisters, 1901
1901 Annual Report

FIRST STATE SCHOOLS FOR THE BLIND (heading for panel 4)

The first state-supported school for the blind was founded in Ohio in 1837, followed by Virginia in 1839, and Kentucky in 1842. By 1875 thirty public and private schools for blind children had been established in the country.

1838
VIRGINIA INSTITUTION FOR THE DEAF, DUMB, AND BLIND
Now, Virginia School for the Deaf and Blind, Staunton

IMAGE: The Virginia Institution moved into this building in 1846. The brick, Greek Revival building was designed by architect Robert Cary Long. The building currently houses administrative offices for the school and is listed on the National Register of Historic Places.
Photo courtesy Virginia School for the Deaf and Bind

IMAGE right: *Main building, ca. 1920*

IMAGE left: Jean Charles Martin Merillat (1811-1881)

Dr. Merillat was principal of the Blind Department of the school for 13 years. When the deaf and blind schools merged in 1852, Merillat was appointed superintendent and served until 1862.
Photo courtesy Virginia School for the Deaf and Bind

1837
OHIO INSTITUTION FOR THE EDUCATION OF THE BLIND
Now, Ohio State School for the Blind, Columbus

IMAGE: The first school building was built in 1839.
Engraving from 1849 annual report

IMAGE: Student musicians in front of the 1839 school building
Photo from a stereoscope card

IMAGE: 1839 building, photo ca. 1867

IMAGE: William Tinsley was architect of the second school building which dates to 1874.
1874 annual report

IMAGE: Student field day in front of 1874 building, ca. 1900

IMAGE:
William Chapin (1802 - 1888) was the first principal of the Ohio Institution, the first state school for the blind. He had been trained as an engraver and mapmaker, but became interested in education of blind children and made it his life-long career. Chapin served at Ohio until 1849 when he became principal of the Pennsylvania Institution.

1842
KENTUCKY INSTITUTION FOR THE BLIND
Now, Kentucky School for the Blind, Louisville
1855 Building
After fire destroyed the school building in the city, architect E. E. Williams, was hired to design a new building on a ten-acre site on the eastern edge of town. The students moved into the building in 1855. It was demolished in 1969.

IMAGE: Bryce M. Patten (1814-1891) was founder and first superintendent of the Kentucky Institution. He served from 1842 to 1871. Patten was also the founding superintendent of the American Printing House for the Blind.
Photo courtesy Filson Historical Society

IMAGE: *Architectural drawing from the Historic American Buildings Survey, 1934.*

Reading Rail Quotes, beginning at right, moving left

. . . for although it has not been in operation long enough to accomplish its great end, the qualification of many blind for usefulness and independence in life, it has done much toward it, by increasing the confidence of the pupils in their own resources.
Annual Report of the Trustees of the New-England Institution for the Education of the Blind, to the Corporators, 1836

To teach the blind therefore to read, and to form a library proper for their
use, must constitute the object of our first care.
Valentine Hauy, *An Essay on the Education of the Blind*, Paris, 1786

The idea of a school for this helpless class was no sooner formed, than Mr. Friedlander, taking charge of a few blind children, demonstrated, to the satisfaction of the community, its practicability and its benefits. So speedy and decisive were the results…that perhaps no benevolent object…so quickly commanded the active sympathies of the public.
Fifth Annual Report of the Managers of the Pennsylvania Institution for the Instruction of the Blind, Philadelphia, 1838

The mental reception of things hitherto strange or dark to him [the blind student], excites his fancy, which is already very lively; his soul awakens daily more to activity, and affords him gradually such a delight to learn, and to know more, that he spares no pains for the attainment of his desire; nay, he can find no pleasure but in constant mental and physical occupation.
J. R Friedlander, *An Address to the Public at the First Exhibition of the Pupils of the Pennsylvania Institution for the Instruction of the Blind*, Philadelphia, 1833

The Trustees have now the satisfaction of announcing, that their institution has been in actual operation for five months; and that their most sanguine expectations of the capacity of the blind for receiving an education, have been fully verified in the progress of the interesting beings under their charge.
Address of the Trustees of the New-England Institution for the Education of the Blind to the Public, Boston, 1833

…Among the subjects offered at the Pennsylvania Institution for the Blind was music, according to the general system of musical notes, the first principles of which in every part were taught theoretically and practically as likewise singing, and even several instrument—such as the piano (the basis of music for all my pupils), violin, violincello, flute, and horn."
-Julius Friedlander, *An Address to the Public, First Exhibition of the Pupils of the Pennsylvania Institution for the Instruction of the Blind,* 1833

RR IMAGE: The students' daily schedule, called *Scheme of Hours* and the subjects they studied in 1872 at the Virginia Institution